American Fabrics

QUALITY CRAFTSMANSHIP STYLE

FORSTMANN

100% VIRGIN WOOL

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Look for this label ... it identifies the finest woolens in the world

FORSTMANN WOOLEN COMPANY
PASSAIC, N.J.

American Fabrics

. . . dedicated to the belief that Fashion begins with the Fabric . . .

that the American textile industry casts a major influence on the

economic and social aspects of the world in which we live . . . that

American textiledom has deservedly attained the world's pinnacle

from which it can never be dislodged. To all who work within or with

the industry this volume number eighteen of American Fabrics

is offered as a measure of help, of service

. . . and, we hope, of inspiration.

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American Fabrics

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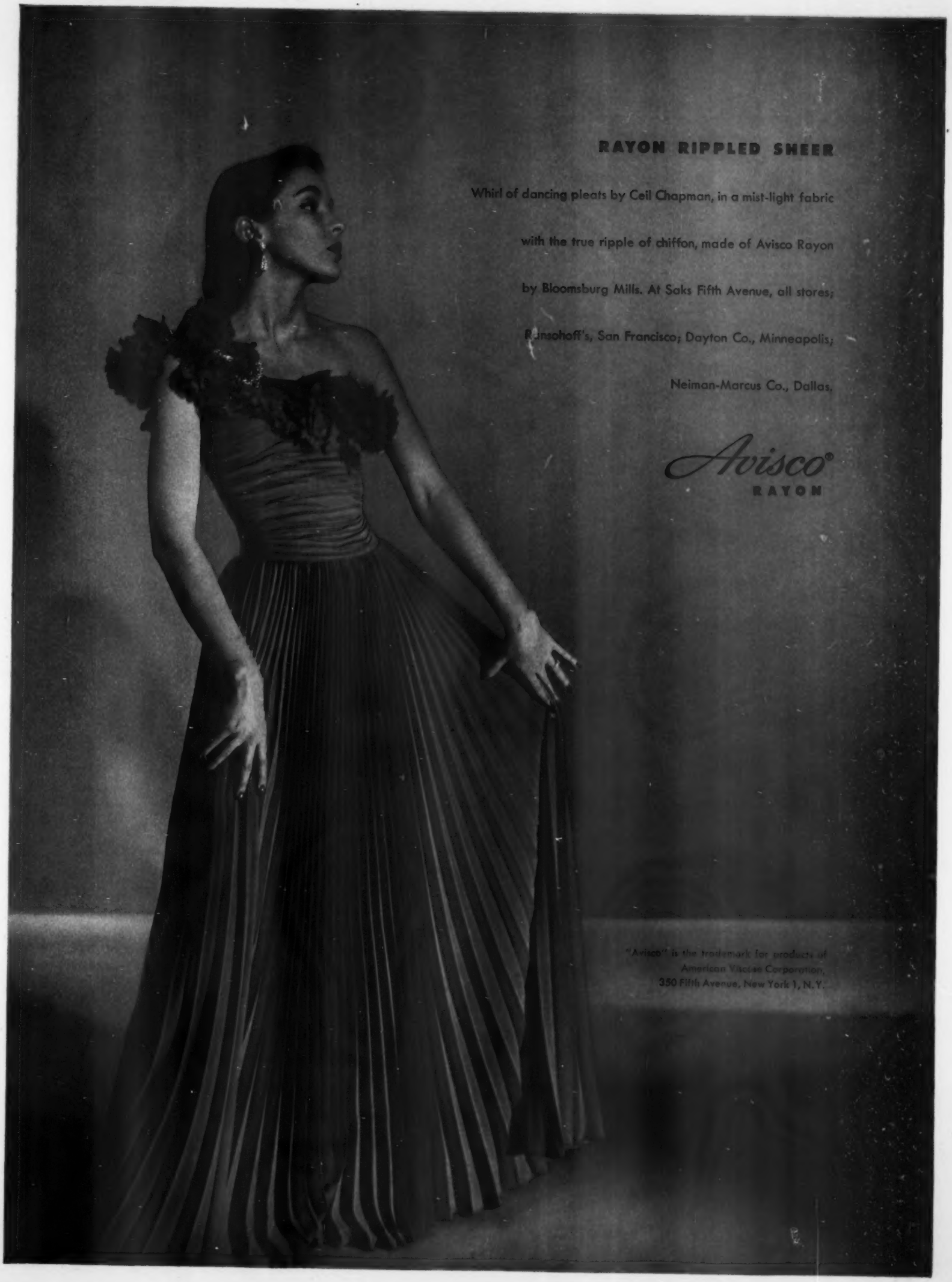
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57 Worth Street, New York

fabrics from Burlington Mills

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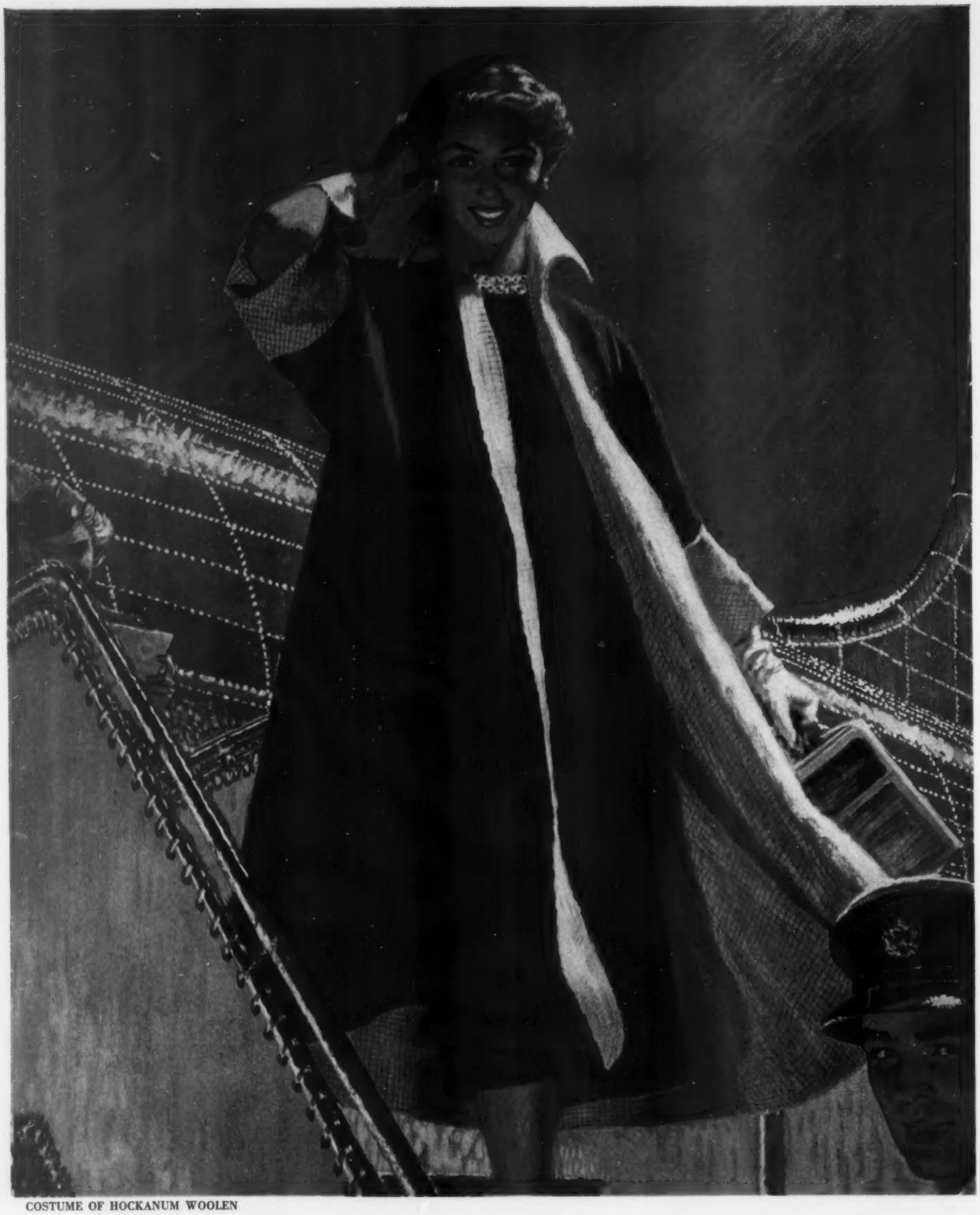

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— AMERICAN FABRICS, *Spring, 1951*

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A DIVISION OF UNION CARBIDE AND CARBON CORPORATION, UCC NEW YORK 17, N. Y.

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—WILLMOTT

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Lingerie by Saab

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9 times out of 10 TRAVIS helped develop it!

today it's

*nylonizing!**

Travis was first to see the tremendous advantages of this miracle finish for nylon goods. Travis went all out . . . *first* . . . in furthering the development and promotion of nylonizing. Today, Travis Nylonized Fabrics make up a goodly share of the entire line of Travis Nylon Fabrics.

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until it is developed into

FABRIC by **TRAVIS**

the first name in nylon fabrics and the newer Du Pont fibers*

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Here is the easy elegance of jersey at its best, dramatized by Claire McCardell in this lovely Townley dress. Of course it's VICALAINE SAG-NO-MOR jersey—Wyner's superlative blend of worsted and soft, luxurious Vicara*, the magical, new fiber that enhances the quality, beauty and comfort of the fabric.

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"THE FIBER THAT IMPROVES THE BLEND"

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VIRGINIA-CAROLINA CHEMICAL CORPORATION
FIBER DIVISION • RICHMOND, VIRGINIA

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it's not only the fashion . .

. . . but the **fashion future**
of your fabrics . . .
that brings customers
back for more

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finish

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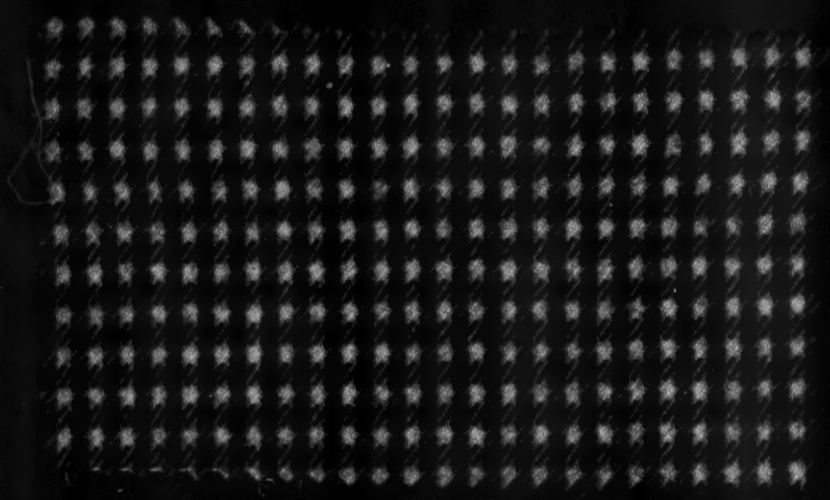
...the miracle yarn that
made swimsuit fabrics

High Fashion

UNITED STATES RUBBER COMPANY
ROCKEFELLER CENTER • NEW YORK



Today's Finest Fabrics—Tomorrow's Finest Fashions

by SHAMOKIN

Shamokin Woolen Mills, Inc. · 450 Seventh Avenue, New York 1, N. Y.

New in approach

Original in design

Unique in format

Daring in technique

Significant in content

COHAMA* *fabrics* *fall presentation*

as seen on the following pages . . .

U. S. Pat. Off.

VICTORIAN IDEAS . . .

an age of manners, reborn in the crisp textures of these Cohama imported pure silk, yarn-dyed taffetas . . . in a wonderful whirl of plaids and stripes . . . sometimes bold, sometimes shy, always news. Opposite, seven examples, all in woven patterns, all with a reminiscent Victorian rustle, yet saying new things in fashion. Some are soft-spoken plaids outlined in satin stripes, some are large, gay patterns, others subtle as the bouquet of fine wine.

THE WEAVE IS NEWS . . .

the weave is wearable, wonderful, welcome. The weave is Jacquard, in the tradition of intricate tapestries and brocades. But a new spirit of Jacquard—in pure silk taffetas, in rayon taffetas, in textures ever-rich in surface treatment. New Cohama patterns include: abstract geometrics, a remarkably textured Barathea, florals, scrolls, spatter-dots. Opposite, seven examples of a great weaving art.

BURNISHED COLORS . . .

hues of gold, bronze, copper and brown glow brightly, gleam softly, in the autumn fashion sky. Cohama's imported pure silks, satin-sheen rayon gabardines, ombre plaid suitings, bold rayon plaids, among others, reflect Fall's important burnished tones.

THE LOOK OF WORSTEDS . . .

is the look of new Cohama rayon suitings, is the trim, tailored look, suited to 365 days a year. Patterns follow the man—or the mood: some traditional, some daringly original. Shown opposite, from this great group: shepherd's checks, handsome coverts, baguette pattern of textured diamonds, classic morning-frock trouser stripes, buttery gabardines. Cross-dyed colors, woven patterns, all following the techniques of wool weaving.

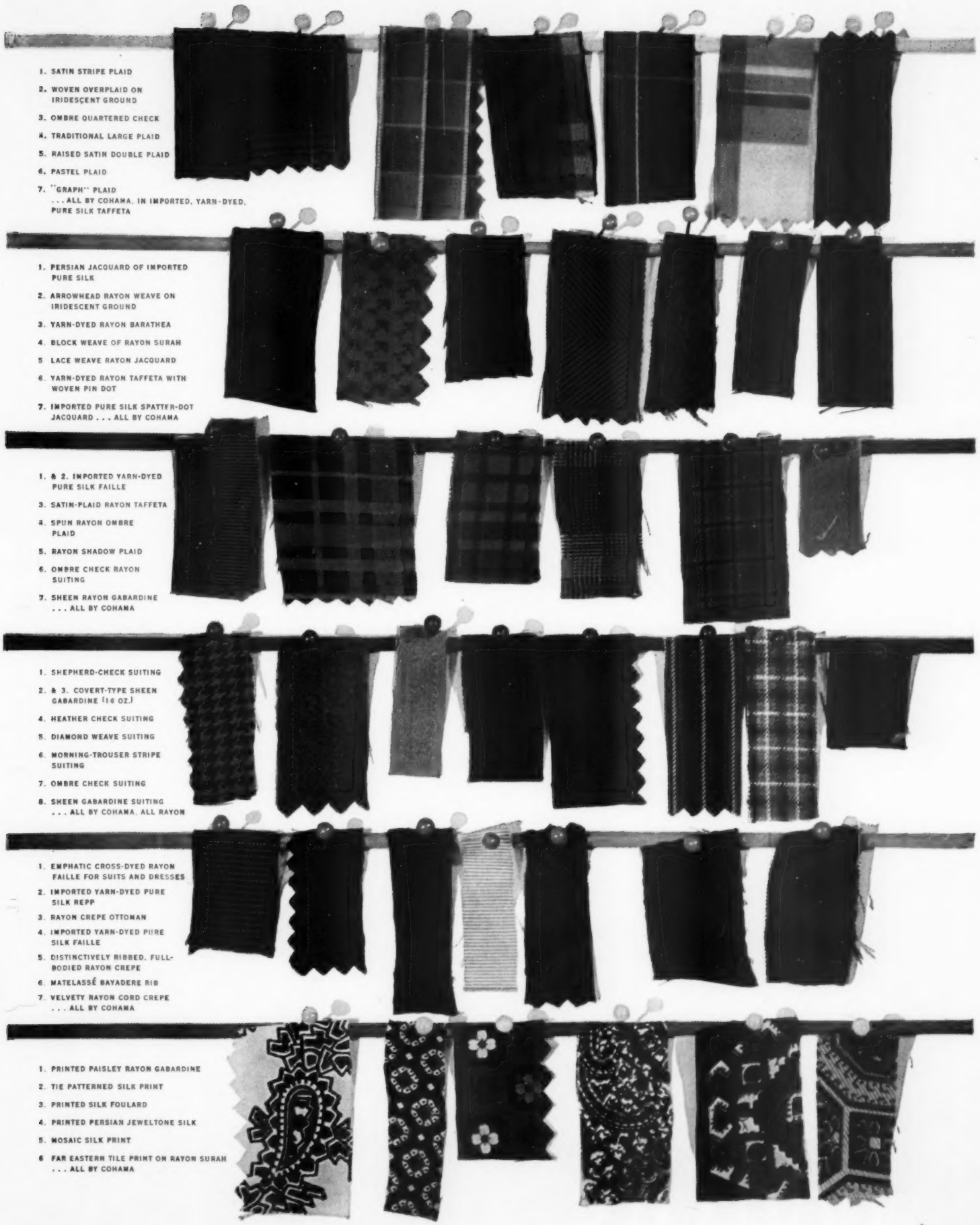
RIBS AND CORDS . . .

come to the surface with a new fascination for Fall. For examples: a defined rayon faille, a pure silk repp, a fine faille in pure silk, a distinctively ribbed rayon crepe, a velvety rolled-rib in a soft, drapey rayon crepe. Always the rhythm of a finely lined surface to catch the light, to catch the eye, in suits or dresses.

THE BYZANTINE SPIRIT . . .

vivid overtones, exotic undertones blend to form a symphony of rich winter colors in this new Cohama print group. Inspired by the authentic designs of Kashmir woolens, and deftly translated to make fashion news. In rayon crepes, gabardines or silks . . . for blouses, separates, lounging clothes. Opposite, a handful in colors to lend sparkle to Fall tweeds.

Most fabrics featured on the opposite page will be seen by-the-yard at your favorite store and in ready-to-wear of leading fashion designers and manufacturers. For additional information, write to: COHAMA fabrics, 1407 Broadway, New York 18, N. Y.



1. SATIN STRIPE PLAID
2. WOVEN OVERPLAID ON IRIDESCENT GROUND
3. OMBRE QUARTERED CHECK
4. TRADITIONAL LARGE PLAID
5. RAISED SATIN DOUBLE PLAID
6. PASTEL PLAID
7. "GRAPH" PLAID
... ALL BY COHAMA, IN IMPORTED, YARN-DYED, PURE SILK TAFFETA

1. PERSIAN JACQUARD OF IMPORTED PURE SILK
2. ARROWHEAD RAYON WEAVE ON IRIDESCENT GROUND
3. YARN-DYED RAYON BARATHEA
4. BLOCK WEAVE OF RAYON SURAH
5. LACE WEAVE RAYON JACQUARD
6. YARN-DYED RAYON TAFFETA WITH WOVEN PIN DOT
7. IMPORTED PURE SILK SPATTER-DOT JACQUARD ... ALL BY COHAMA

1. & 2. IMPORTED YARN-DYED PURE SILK FAILLE
3. SATIN-PLAID RAYON TAFFETA
4. SPUN RAYON OMBRE PLAID
5. RAYON SHADOW PLAID
6. OMBRE CHECK RAYON SUITING
7. SHEEN RAYON GABARDINE
... ALL BY COHAMA

1. SHEPHERD-CHECK SUITING
2. & 3. COVERT-TYPE SHEEN GABARDINE (16 OZ.)
4. HEATHER CHECK SUITING
5. DIAMOND WEAVE SUITING
6. MORNING-TROUSER STRIPE SUITING
7. OMBRE CHECK SUITING
8. SHEEN GABARDINE SUITING
... ALL BY COHAMA, ALL RAYON

1. EMPHATIC CROSS-DYED RAYON FAILLE FOR SUITS AND DRESSES
2. IMPORTED YARN-DYED PURE SILK REPP
3. RAYON CREPE OTTOMAN
4. IMPORTED YARN-DYED PURE SILK FAILLE
5. DISTINCTIVELY RIBBED, FULL-BODIED RAYON CREPE
6. MATELASSÉ BAYADERE RIB
7. VELVETY RAYON CORD CREPE
... ALL BY COHAMA

1. PRINTED PAISLEY RAYON GABARDINE
2. TIE PATTERNED SILK PRINT
3. PRINTED SILK FOULARD
4. PRINTED PERSIAN JEWELTONE SILK
5. MOSAIC SILK PRINT
6. FAR EASTERN TILE PRINT ON RAYON SURAH
... ALL BY COHAMA

42 *fabulous fabrics for fall*

. . . representative of the new COHAMA line, consisting of literally hundreds of fabrications, qualities, finishes, weaves, designs, patterns, prints, colors . . .

- In staples, semi-novelties, novelties . . .
- In silks, worsteds, rayons, nylons, blends, mixtures . . .
- In scope and in depth, one of the broadest collections ever presented to the market by a single source . . .
- In both "popular" and "class" price fields, realistically priced to offer maximum value . . .
- In fashion-rightness, possessing the authoritative approval of leading stores, of top-flight fashion editors, of first-rated manufacturers, of America's greatest names in design . . .
- In consumer acceptance, one of the famous names in ready-to-wear and in home-sewing . . .

This collection of fashion-fabrics will be seen by millions of fashion-conscious women in this dramatic full-color double-spread ad – powerfully concentrated in the peak August-September selling period – in these leading national magazines:

COHAMA* *fabrics*

1407 BROADWAY • NEW YORK 18

A division of United Merchants and Manufacturers, Inc.

KANMAK *THOROUGHBRED WORSTEDS*

KAMAFLANNEL

Fashion's sustained love for town and country suits...KaMaFlannel —Kanmak's worsted flannel of 100% *virgin wool.* In classic *greys* ...new *browns*...Autumn *blues*—

GREY CHALK	LIMESTONE
ASH GREY	DESERT SAND
GRAPHITE	BLUE GRAVEL
EARTH BROWN	INKSTONE

KANMAK
100% VIRGIN WOOL

Suit of KaMaFlannel by JOS. KRAELER-FRASCA Co.

KANMAK TEXTILES, Inc. • *Women's Wear Division* • 417 Fifth Avenue • New York 16 • New York

LORRAINE WORSTEDS

LORRAINE GABARDINE

100% virgin worsted gabardine in a new key that harmonizes a subtle sheen with rich, lavish color. Another magnificent example of the quality and distinctive value that motivates smart women to select fashions of Lorraine Worsteds at leading stores.

LORRAINE MANUFACTURING CO., INC.
261 Fifth Avenue, New York

A GENUINE Lorraine FABRIC

FABRICS OF INTEGRITY®

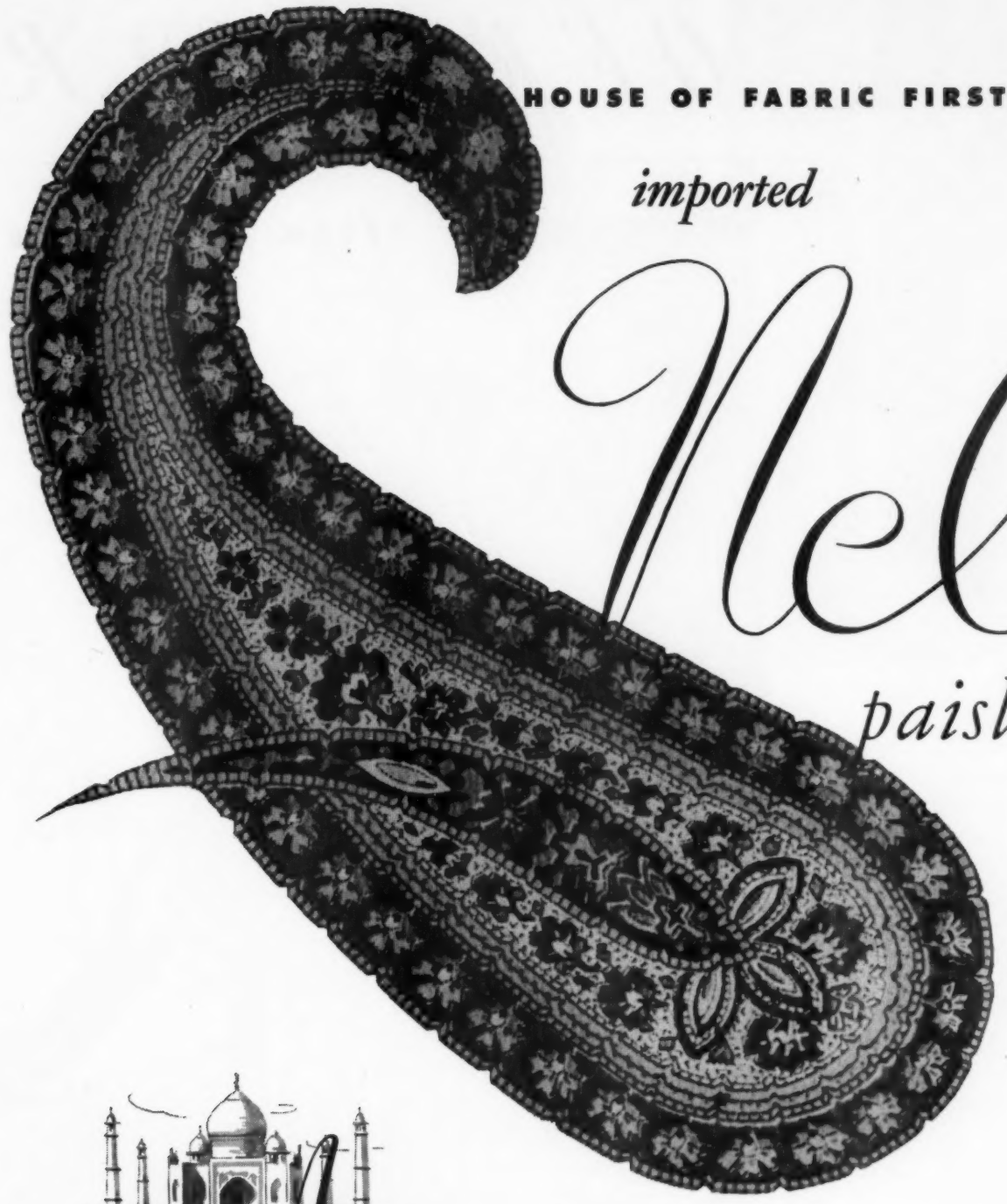
As appearing in the August issues of CHARM and MADEMOISELLE

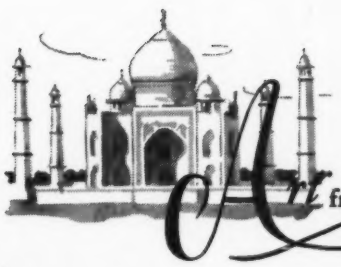
HOUSE OF FABRIC FIRSTS

imported

Nelo

paisley challis





Art from the ages finds contemporary expression in Nelo's exquisite paisley challis . . . These imported Swiss fabrics richly interpret the lore of the ancient East with their radiant jewel colorings. Ounces lighter than any other woolen . . . with a soft supple hand that drapes handsomely. In a wide range of colors, this inspired collection also includes stripes, florals, geometrics and other modern designs. Styled for America's finest fashions and fashions-by-the-yard.

exclusive retail distributor: **BART SCHWARTZ CORP., 1407 BROADWAY, N. Y. 18**

TEXTILE LOOMS, INC., 1328 BROADWAY (cor. 35th St.) N. Y. 1

OFF TO PAR

Versatile coat of Custom's "Everglaze" cotton satin pique. Hat especially created by Mr. John.

Raymodes at-home coat designed by Jean Desses, made of Fabricana's "Everglaze" cotton satin.

Miss America

and her ex

EVERGL

Simpson's "Everglaze" cotton satin—late afternoon suit with jacket; sheath dress for evening.

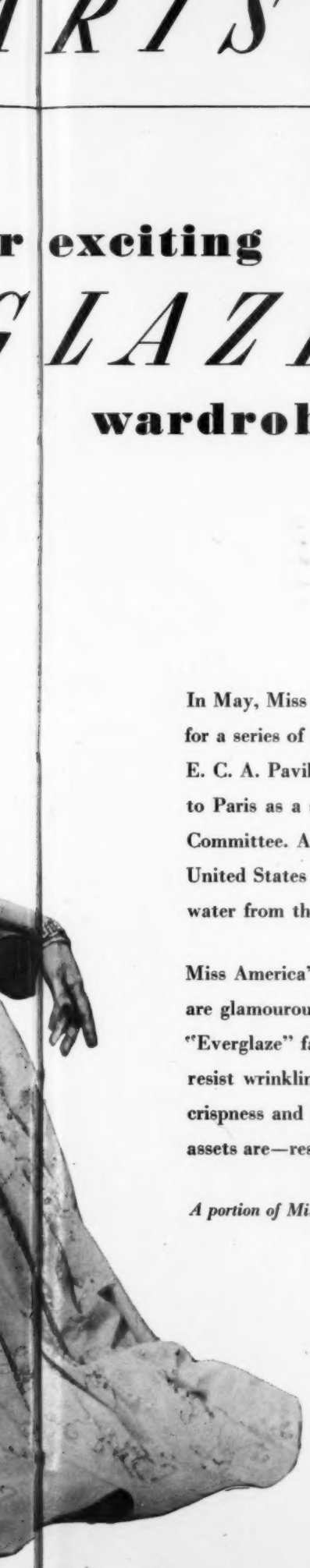
Gown of Crown's "Everglaze" Taffa-Heart handsomely embroidered with beads and sequins. An original by Kiviette.

RIS!

r exciting
*GLAZE** wardrobe

Two-piece coat and dress costume of Everfast's cotton satin in "Everglaze." Advance Pattern #5776.

Frances Sider's terrace dress made of Everfast's polished cotton in "Everglaze."



Classic two-piece afternoon dress by Dorothy Cox, made of Custom's "Everglaze" cotton satin pique.

In May, Miss Yolande Betbeze, Miss America, 1951, flew to Europe via Air France for a series of official appearances. She visited the "Everglaze" exhibit in the E. C. A. Pavillion of the Internationale Exposition in Lille. Also, she traveled to Paris as a special envoy from the United States, appointed by the Bi-Millinaire Committee. As a token of friendship and understanding between the United States and France, she took a specially designed crystal container filled with water from the Hudson to be mingled with the waters of the River Seine.

Miss America's Travel Wardrobe is entirely of "Everglaze" fabrics. The clothes are glamourous, versatile and appropriate for every occasion. Wonderful, washable "Everglaze" fabrics are particularly suited for travel. They pack beautifully, resist wrinkling, save time and effort because they retain their fresh crispness and beauty through the life of the fabric. Other "Everglaze" travel assets are—resistance to soiling, spotting, stretching and shrinking.

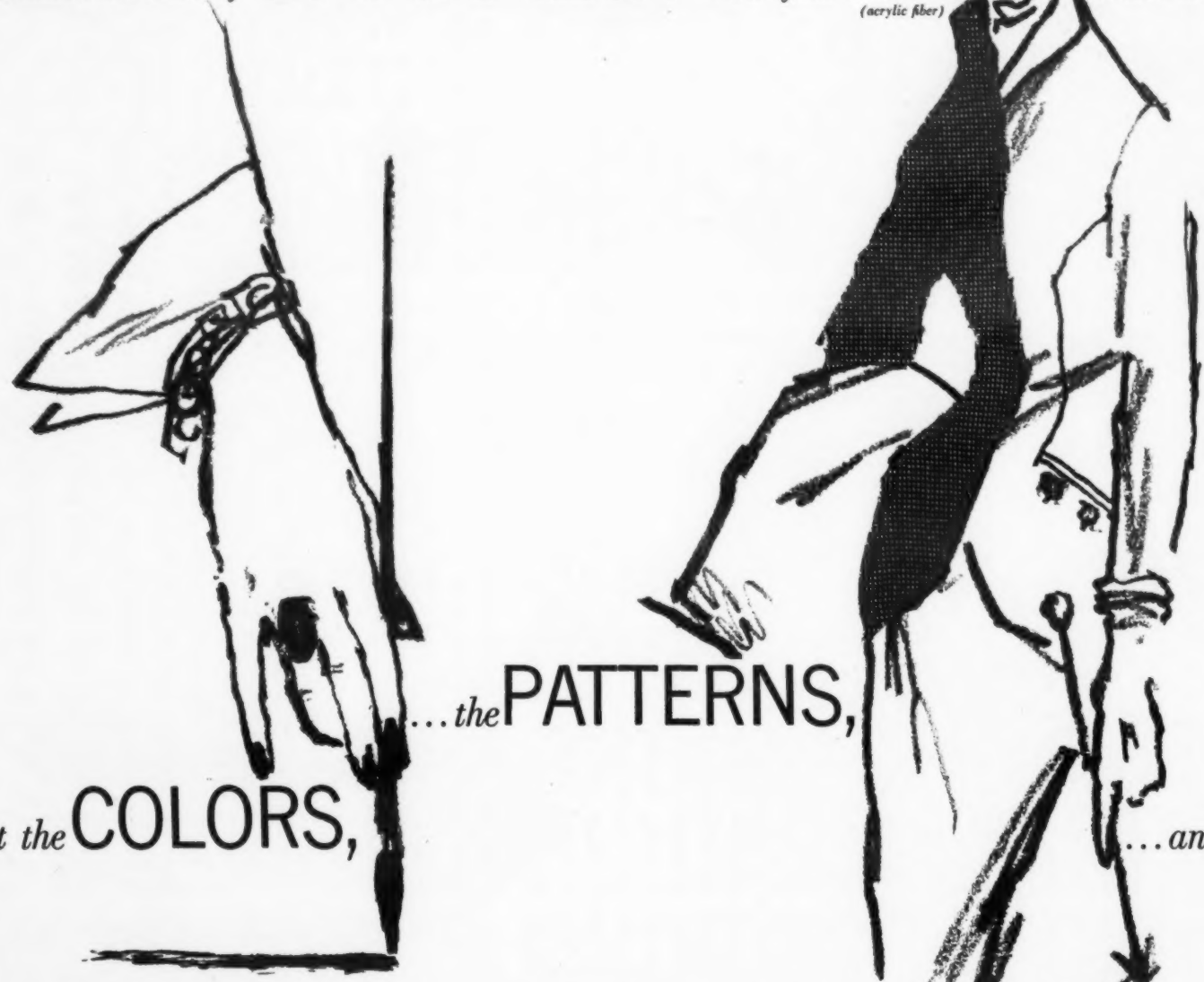
A portion of Miss America's Paris Wardrobe is shown here.

"Everglaze" fabrics are achieved by special formulations and processes, subject to scientific testing, which transform inexpensive cloths and impart remarkable beauty and durability. Everybody—producer, converter, fabricator, merchant and consumer benefit with "Everglaze". Investigate its magic sales possibilities.

*A trade-mark signifying fabric finished and tested according to processes and standards controlled and prescribed by Joseph Bancroft & Sons Co.

Fabrics of
tomorrow
today

the body, bounce and brawn of **SHARALON** *come from* **ORLON*** *(acrylic fiber)* *blended with* **VISCOSE** *and* **ACETATE** *rayon*



A Labtex Fabric
SHARALON

but the **COLORS,** *...the* **PATTERNS,** *...and* **FASHION** *personality is*

LABTEX *because LABTEX can make a good thing even better!*

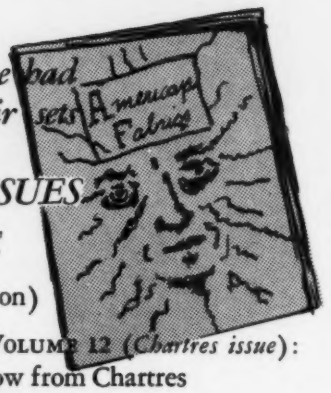
Feel it. Crush it. Give it the works. Tailor it into the timeliest suit, shape it into the curviest separates. For SHARALON is a fabric with body, bounce and brawn . . . with a natural flair for drape and design, an incredible way of resisting wrinkles . . . a delightful warmth-with-less-weight.
For LABTEX knows how to take a miracle fiber like filament ORLON and put it to work. To work for *you* . . . for your customers. To give your suits, separates and sportswear the FASHION EXCITEMENT that no woman in her right mind can resist

You're giving her all this and LABTEX, too. Richer colors, exciting patterns! And best of all . . . the LABTEX standard of quality.

* A DU PONT TRADEMARK.

LABTEX FABRICS *Division of Cantor Greenspan Co., Inc.*
469 Seventh Avenue, New York 16, New York

This invitation is extended to recent subscribers who have had difficulty finding past issues they need to complete their sets



A FEW COPIES of the FOLLOWING BACK ISSUES of AMERICAN FABRICS are AVAILABLE

(We regret that Volumes 1 through 8 are entirely out of circulation)

SOME OF THE FEATURES IN VOLUME 9:
Effect of Color on Man's Emotions, *by Howard Ketcham*
History of the Marriage Ceremony *and bridal fabrics*
The Story of Camel's Hair, *with actual fabric swatches*
History of the American Textile Industry, *profusely swatched*
The Symbol of the Rose in Textile Design *over the centuries*
Arms and Armour: *prime examples of skillful design*
Contemporary Artists *contribute to fabric designing*
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At What Level Shall the Industry *seek new talent?*
The Element of Creative Merchandising *under competition*

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The Ancient Sari *transformed into modern dress*
Some of the Pitfalls the Silk Industry *must beware*
Velvet, Royalty's Fabric, *enjoys a fashion rebirth*
Postage Stamps *specially issued to honor textiledom*
What Educators are Doing *to develop talent for textiles*
Bracque: *this modernist's work suggests new colorings*
Hand-loom Weaving in America: *final 16-page manual*
Fabric Facts everyone should know, *by Dr. George Linton*
Portfolio of Fabric Fashion: *four pages of new swatches*

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Nylon: *first comprehensive exposition of this unique fiber*
How Nature Inspired *a complete collection of woolens*
Color, the Eye in Television, *analyzed by Howard Ketcham*
Artist with Needle and Thread: *new embroidery technique*
Authentic District Checks: *merchandising*
Dictionary of Apparel Terms *used in the trade*
Lace, Ever Popular in Fashion: *unusual designs*
World Wool Production *and the rising American need*

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Cover: Stained Glass window from Chartres
Lessons to be learned from Chartres
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Notebook of a Dreamer: *12th and 13th Century art*
Blanket Selling Tips: *facts to make selling easier*
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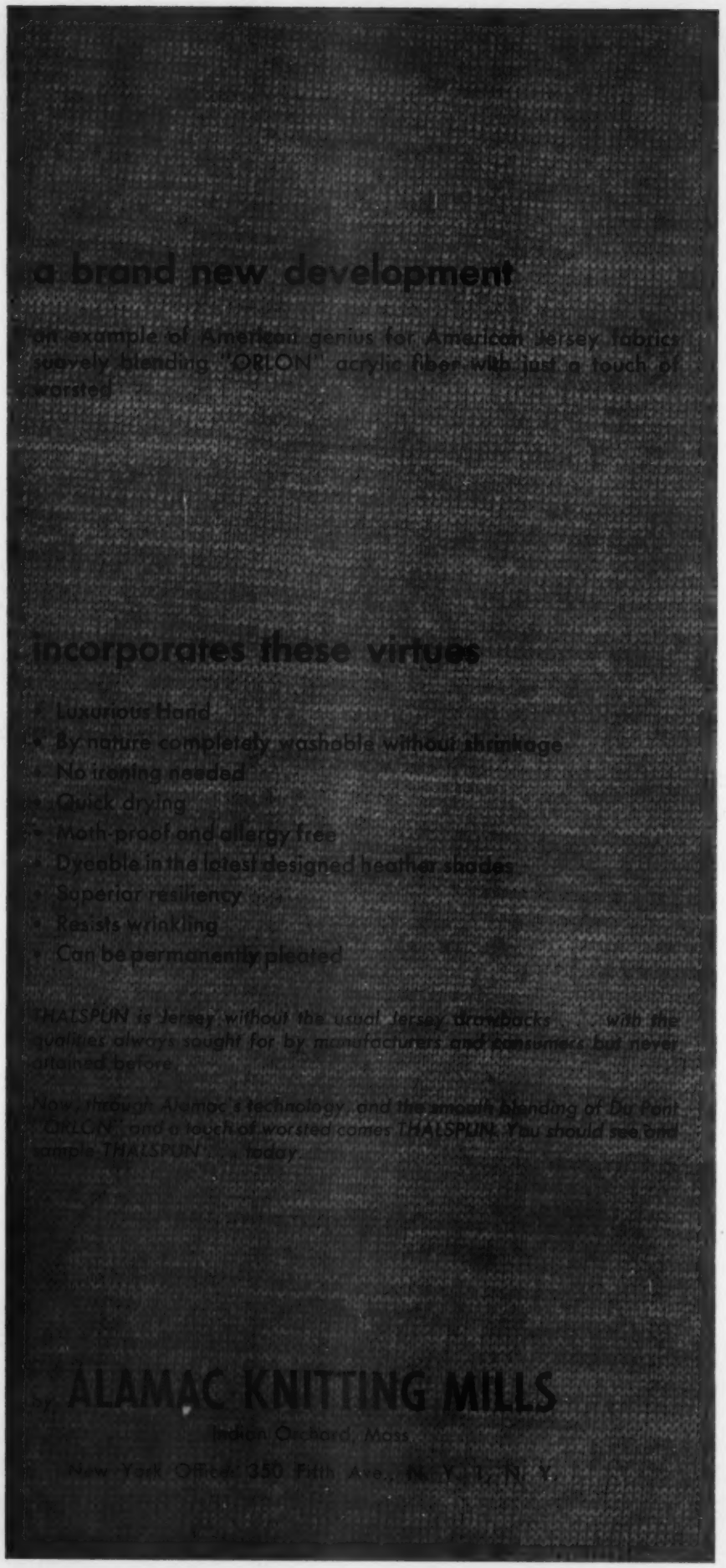
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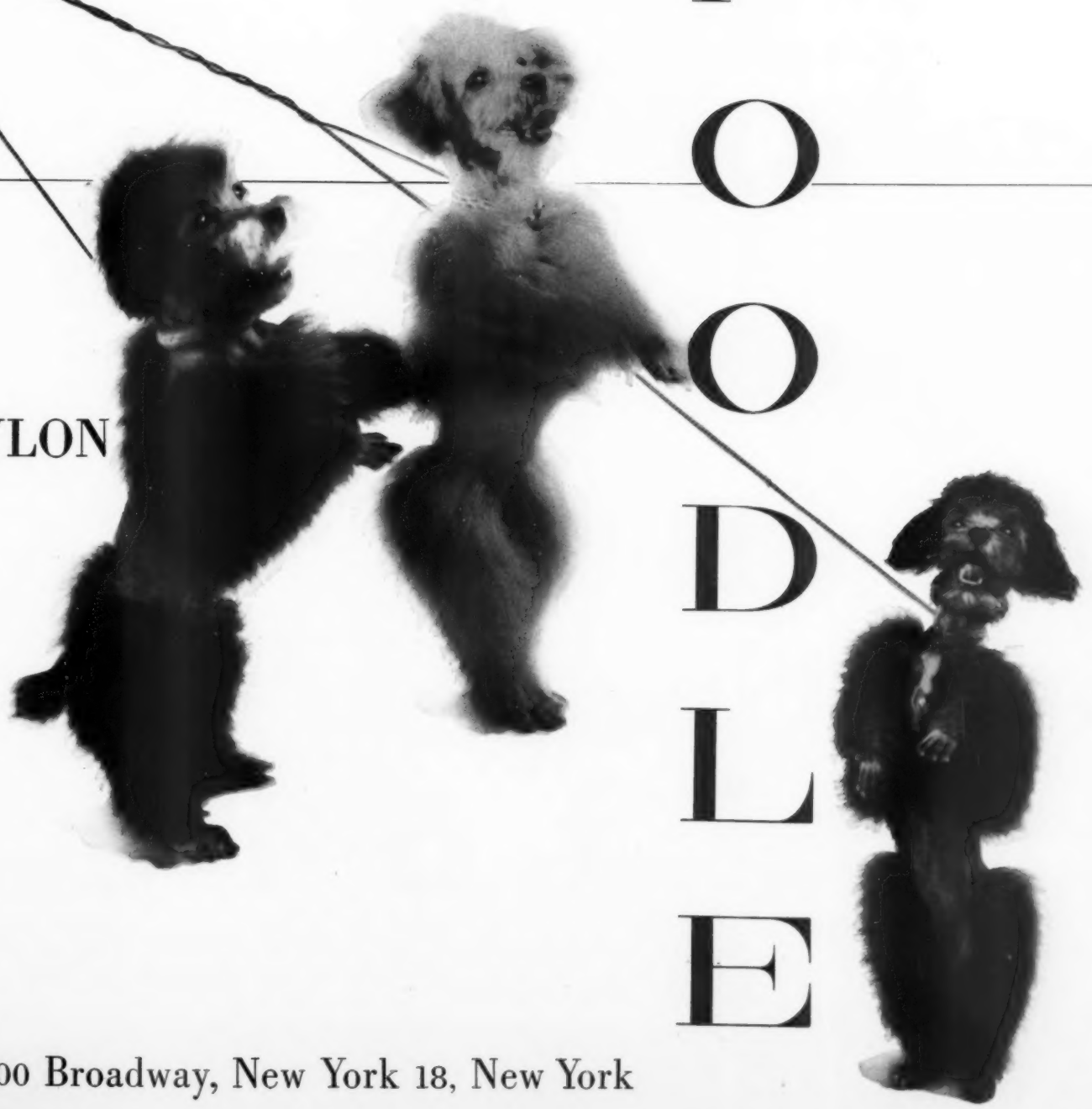

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April 27, 1951

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I have been reading with interest your
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these new fabrics for use in our textile co
mounted, labeled and placed in the permanen
study and reference. Our textile classes
merchandising and home economics majors
have a varied appeal.

Thank you kindly for your
and you may be assured that any mat
you may care to send will be put t

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May 2, 1951

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Very truly yours,

Grace L. Rogers

Grace L. Rogers
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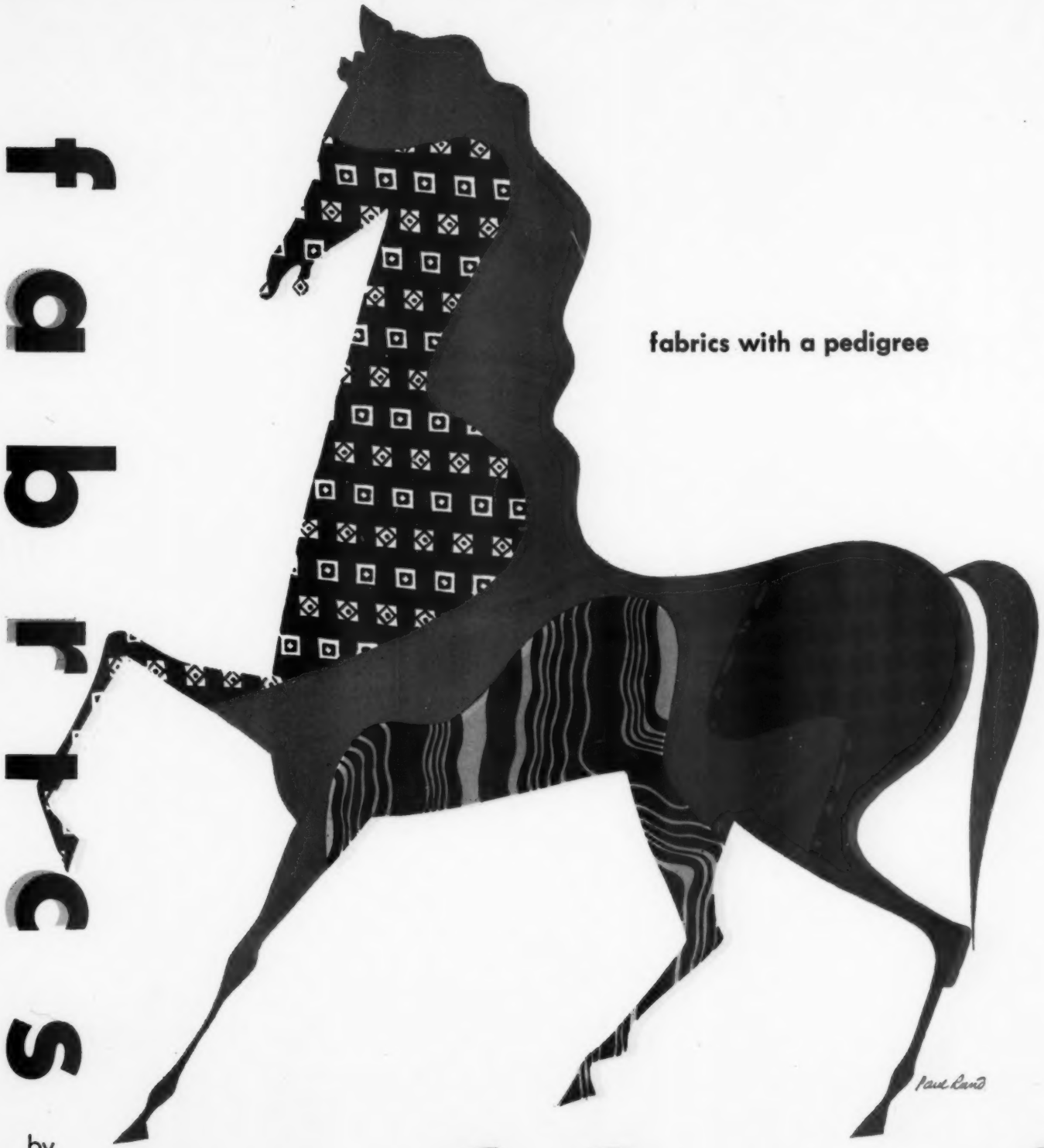
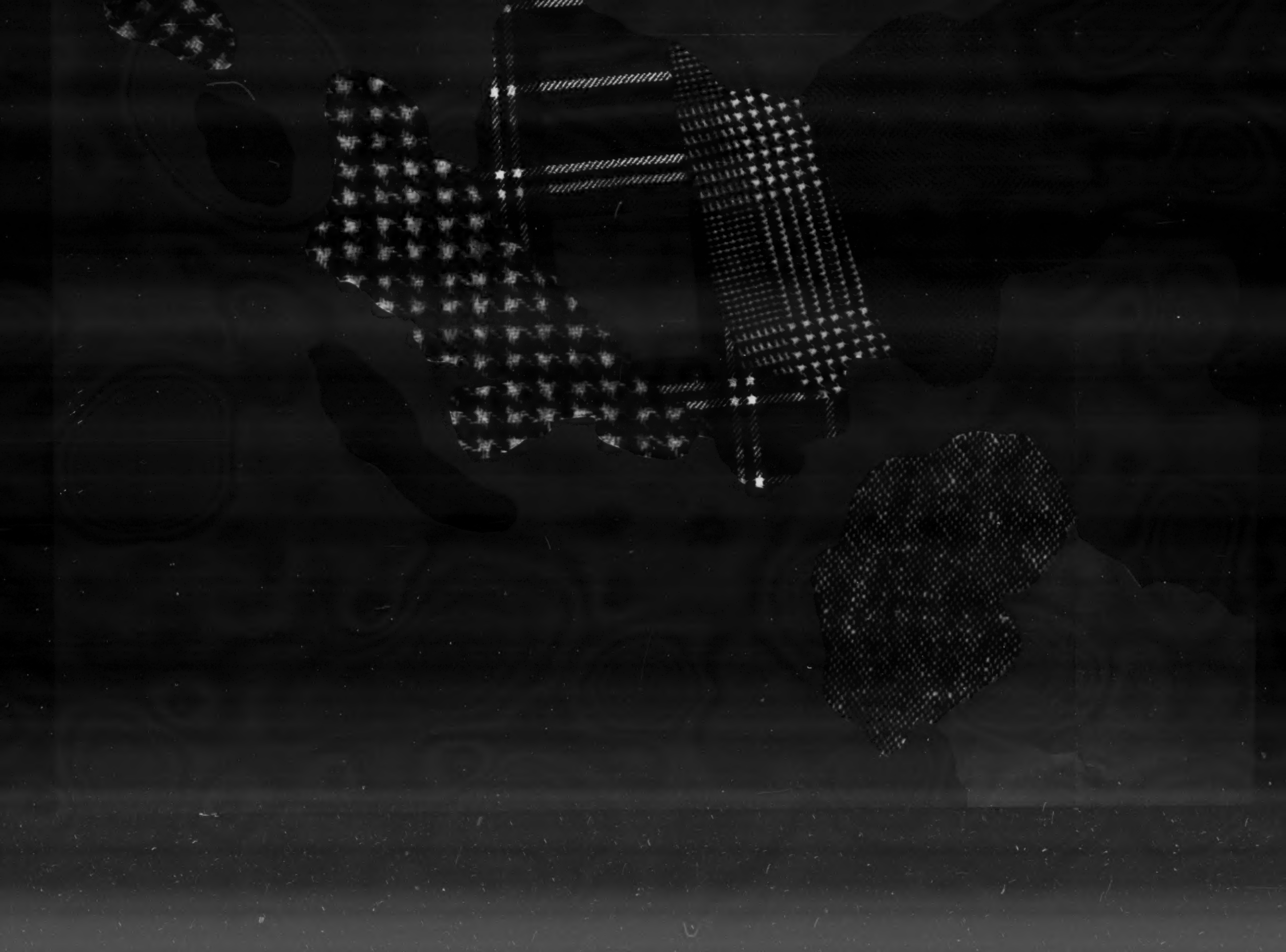
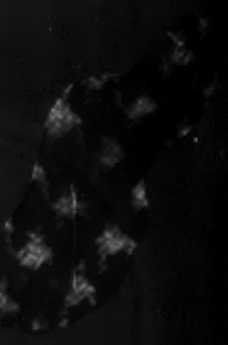


fabrics with a pedigree

by

stafford





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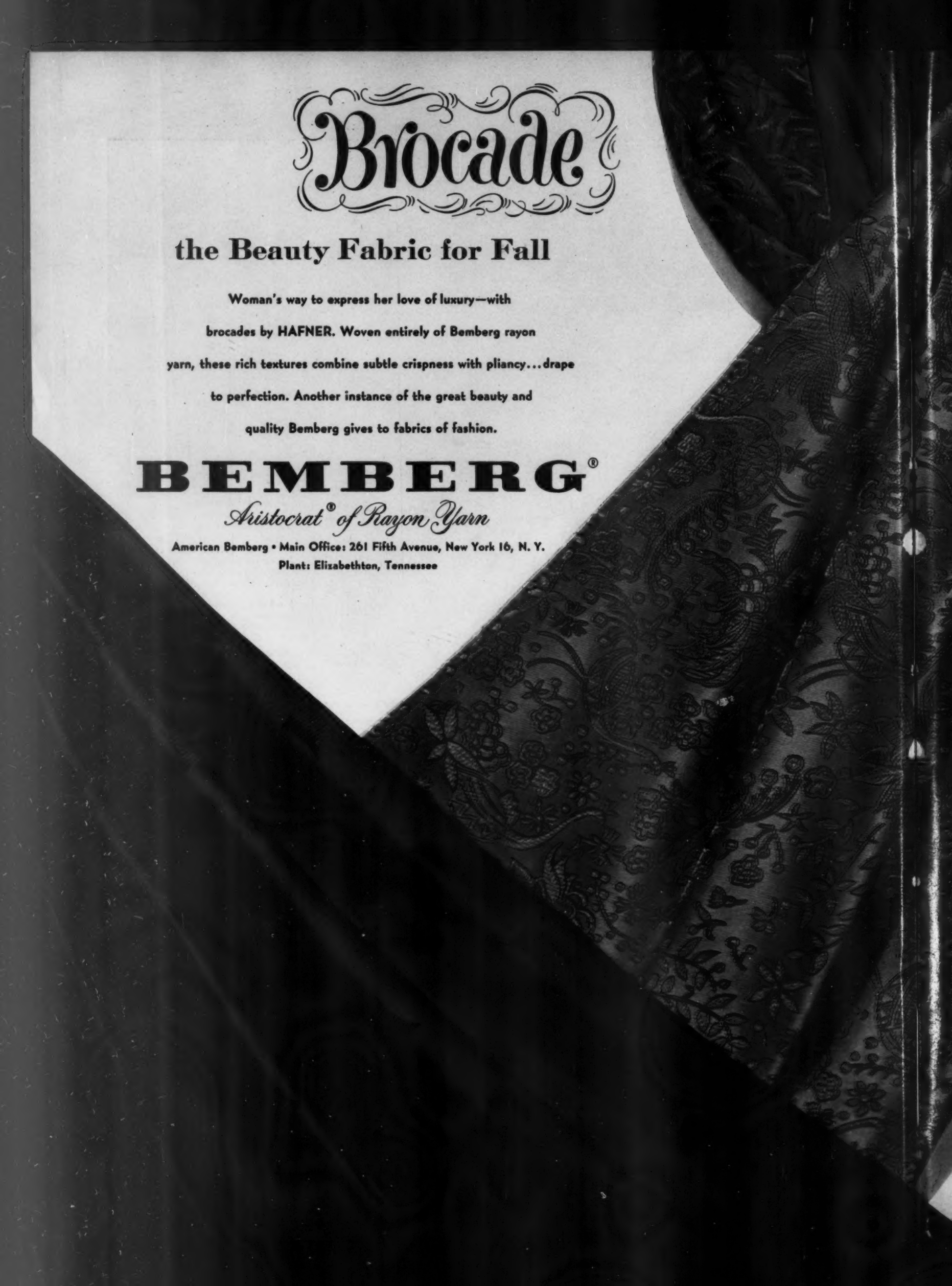

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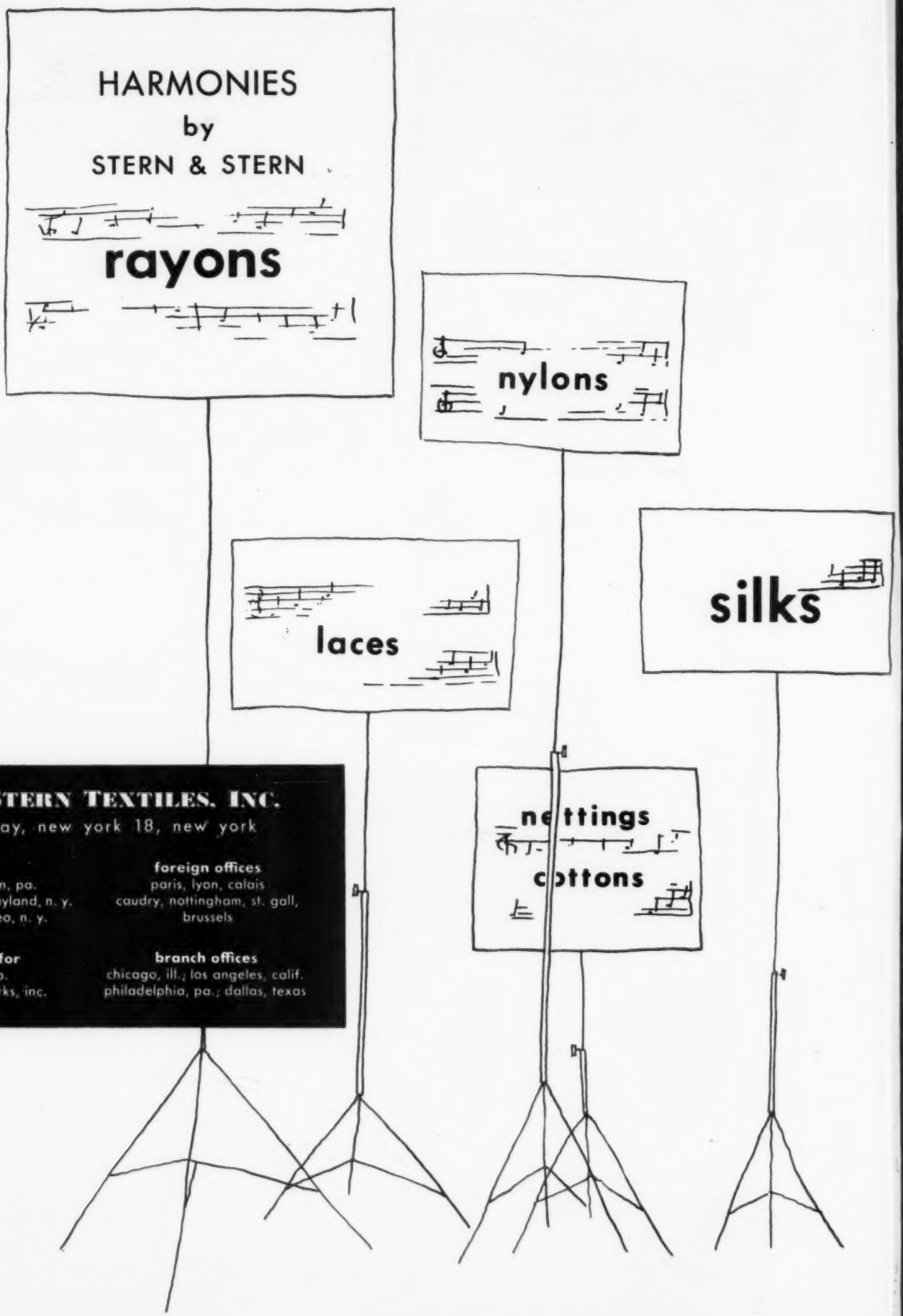

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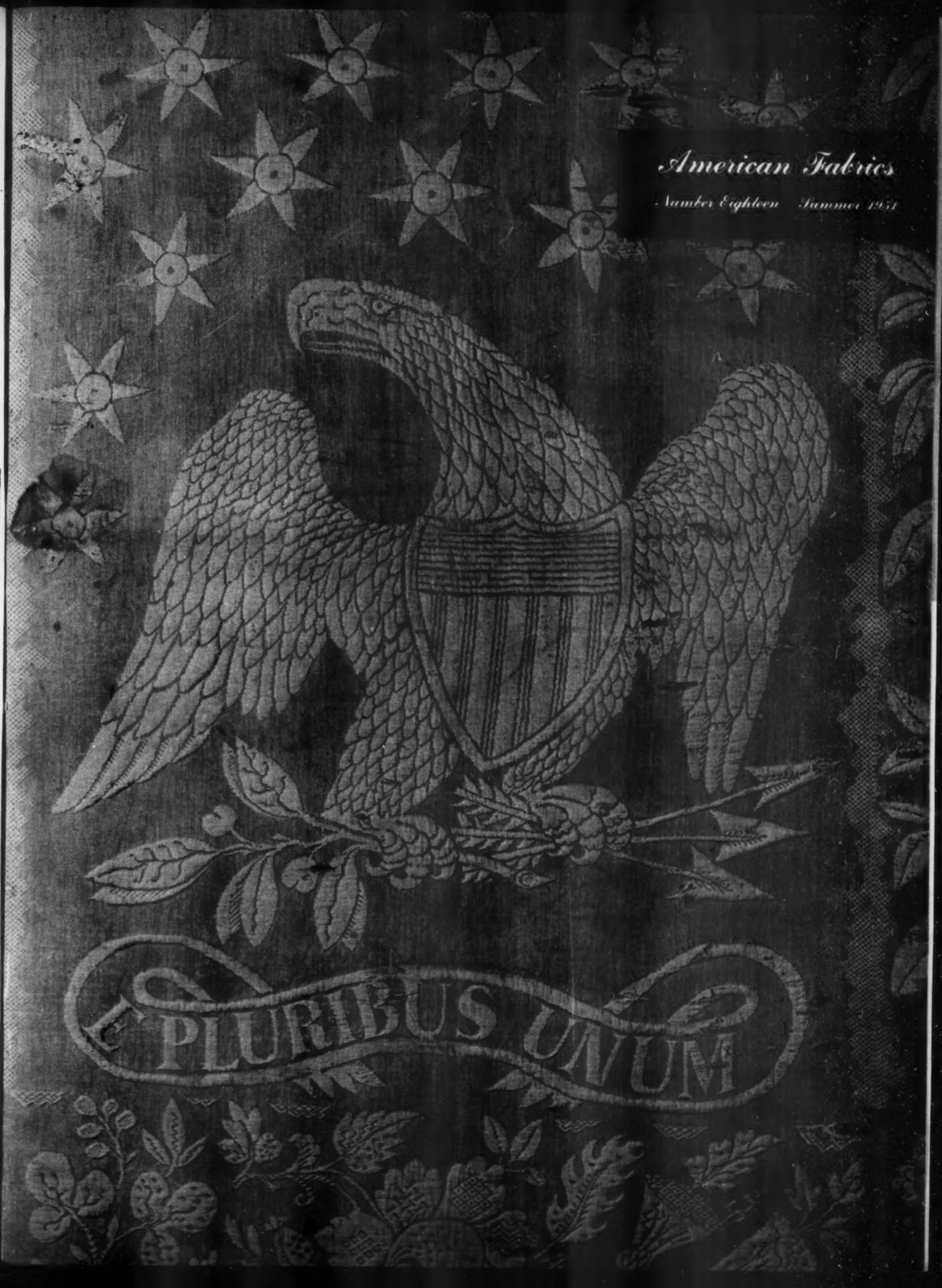
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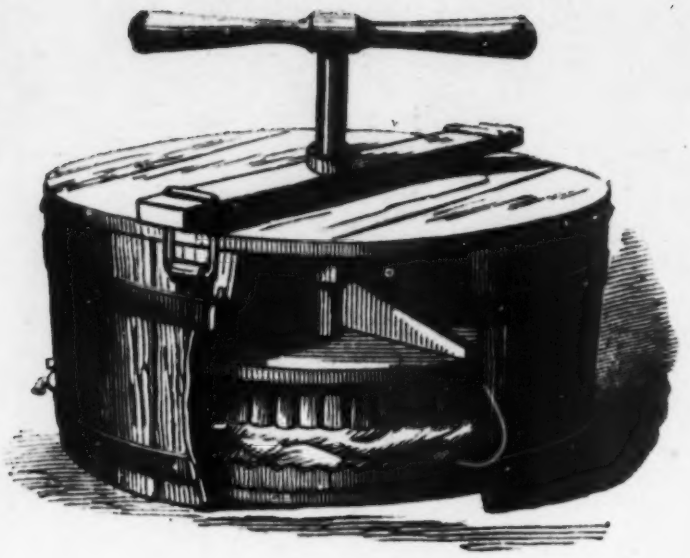


Little did Inventor Berry realize, in 1872, that his creation of the washing machine would ultimately necessitate such drastic changes in the American textile product.

WHO IS THE ULTIMATE CONSUMER?

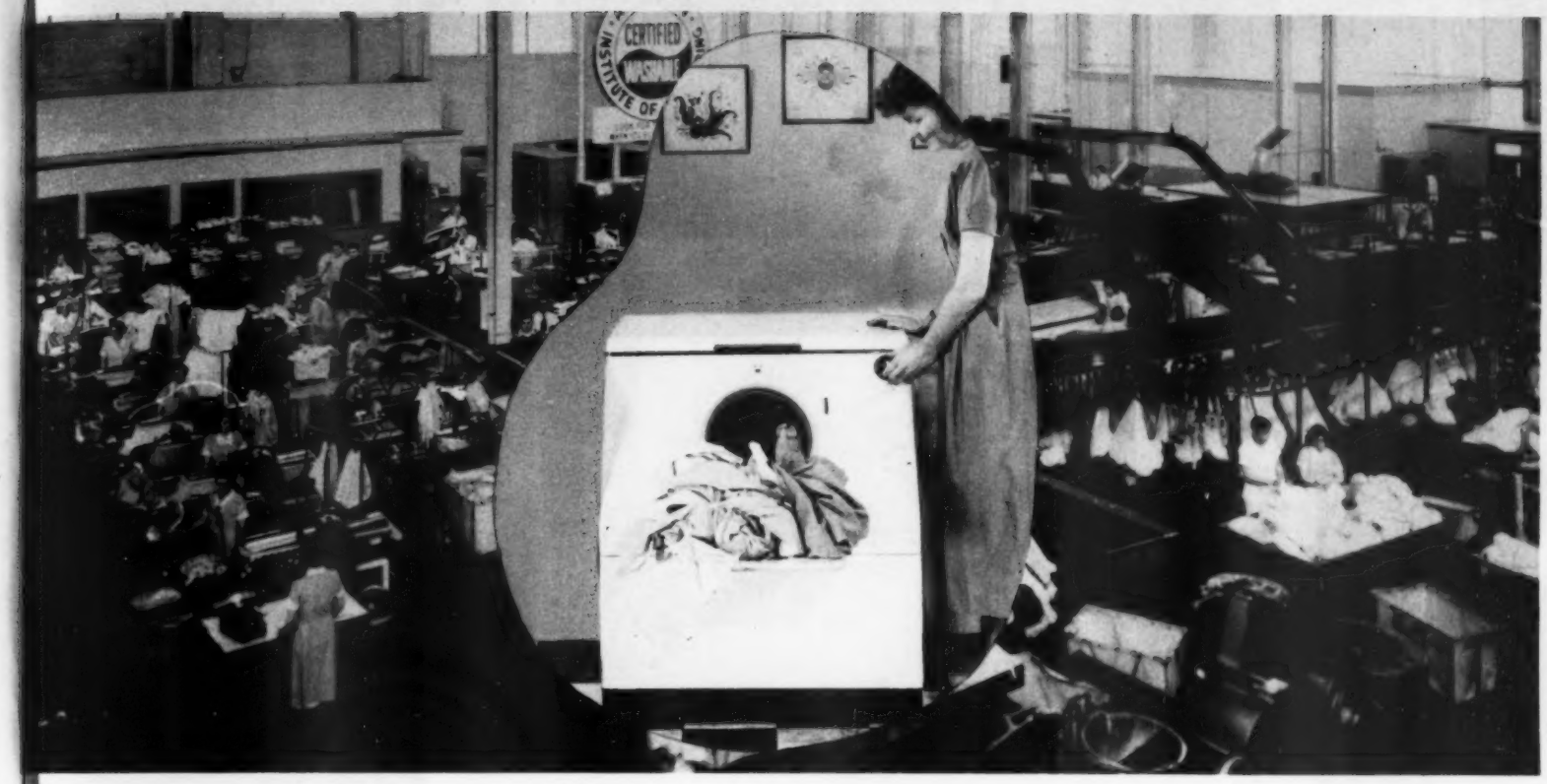
The social evolution in America, accelerated since the end of the last World War, requires a new evaluation of the word Washable

IN THE WORLD OF BUSINESS it is commonly accepted that the ultimate consumer is the individual who buys and uses an article. In a sense this is true; and yet the blind acceptance of this definition is threatening the reputations and the profits of many business firms which manufacture and sell presumably washable merchandise. In the case of such companies, the ultimate consumer is not the user of the product . . . it is the washing machine . . . and it is to the whims and capabilities of this modern instrument that the textile industry must gear its product thinking.

Changing Fabrics in a Changing World

In Issue Number 16 of AMERICAN FABRICS, discoursing on the need for changed fabrics in this changing world, we wrote:

> One of the interrelated situations which culminated in the vast expansion of washable fabrics was the economic condition which produced the home laundry machine. Did the washing machine create the opportunity for washable fabrics . . . was it the widespread use of washable fabrics that made it practical to produce washing machines . . . or did the diminishing supply of the household labor market open up both fields? First came the question of dyes: how could both dyed and printed fabrics be produced with absolute color-fastness? The textile industry marshalled its best scientific and technological brains, worked with the chemical companies both here and abroad, and came up with the right answers. Fabrics could be colored with new brilliance, new depth, new appeal and absolute immunity to the rigors of washing . . . in the mills' own test laundries.
>
> Then came the shock of discovery that, wonderfully as the new colored cloths performed under test conditions, they took a merciless beating in the average home and commercial laundry. Stores, manufacturers and mills were visited with the wrath of the consumer who brought back a shirt or dress or draperies in which the colors had run.
>
> Three things had to be done: *first*, work with the manufacturers of soaps and detergents to achieve cleansing agents which would not injure the dyes in the cloths. *Second*, work with the manufacturers of both home and commercial laundering equipment for the modification of washing machines so that they would not subject merchandise to unnecessarily rough treatment. *Third* (and this became more important as more families sent their laundry out of the home) work with commercial laundries to educate both management and workers in the handling of fabric products.
>
> ' ' '
>
> It can be stated with credit to the leaders in all three fields that they were open-minded and forward-thinking enough to give the textile industry the utmost in cooperation. Two associations, in particular, were quick to contribute most constructively to the educational program, the Soap Institute and the American Institute of Laundering. Had the three industries not worked so swiftly and so intelligently in meeting and overcoming the problem, dyed and printed fabrics could not so soon have attained their present universal acceptance.
>
> However, finding ways to dye fabrics, and then seeing that they retained the colors, was only half the problem which faced the producers of cloth. A more serious bugaboo to the consumer was the matter of shrinkage. Under varying washing conditions two identical garments cut from the same



Billions of textile products each year receive grueling quality tests in the washing machine. Whether in the home or at the commercial laundry, fabric and finish must stand up.

bolt of fabric might shrink in varying degrees. A carry-over of the European tradition in textiles was, until the American revolution in apparel habits, an attitude of indifference by the cloth weavers to the matter of shrinkage. It was accepted that cloth shrinks, and that was that. But in the early part of the 20th Century the attitude changed to one of advanced thinking; the mills and converters realized that if they could offer the consumer the assurance of controlled shrinkage, she would be more interested in purchasing garments and home articles of cotton, for example. Also, they could open up vast new sales fields among manufacturers by stabilizing the dimensions of the fabric before it was cut, at a time when the mass manufacture of soft goods items in America began to grow into a major industry.

When finishers came through with perfected processes for pre-shrinking cloth, the mills began to make their most striking progress. But the significant note, which must be kept in mind, is that much of the stimulus which was injected into the textile industry reflected *the changing habits of this nation* which demanded changed fabrics.

With the imminence of another acute shortage of domestic labor, as well as increased charges by commercial laundries for washing apparel, it is apparent that there will be an enormous increase in the number of merchandise units entrusted to the family washing machine. *How well will your product stand up?* This should be one of the prime considerations held up to close scrutiny by every mill and finishing executive, when pondering the production of any new cloth, from now on.

What Does Washable Mean?

When the layman picks up a shirt, a dress or any other textile product and sees the word *washable* on tag or label, she expects the word to mean *washable under ordinary conditions in the average washing machine.* The time has passed when fabrics, especially rayons, should require special care and special materials in laundering. Both mills and finishers have learned enough, and have secured sufficiently effective chemicals, to avert the need for coddling in the laundryroom. Textiles of all types can be made, and are being made, in such a way that they can be thrown carelessly into the family hamper for routine washing . . . and the layman knows it.

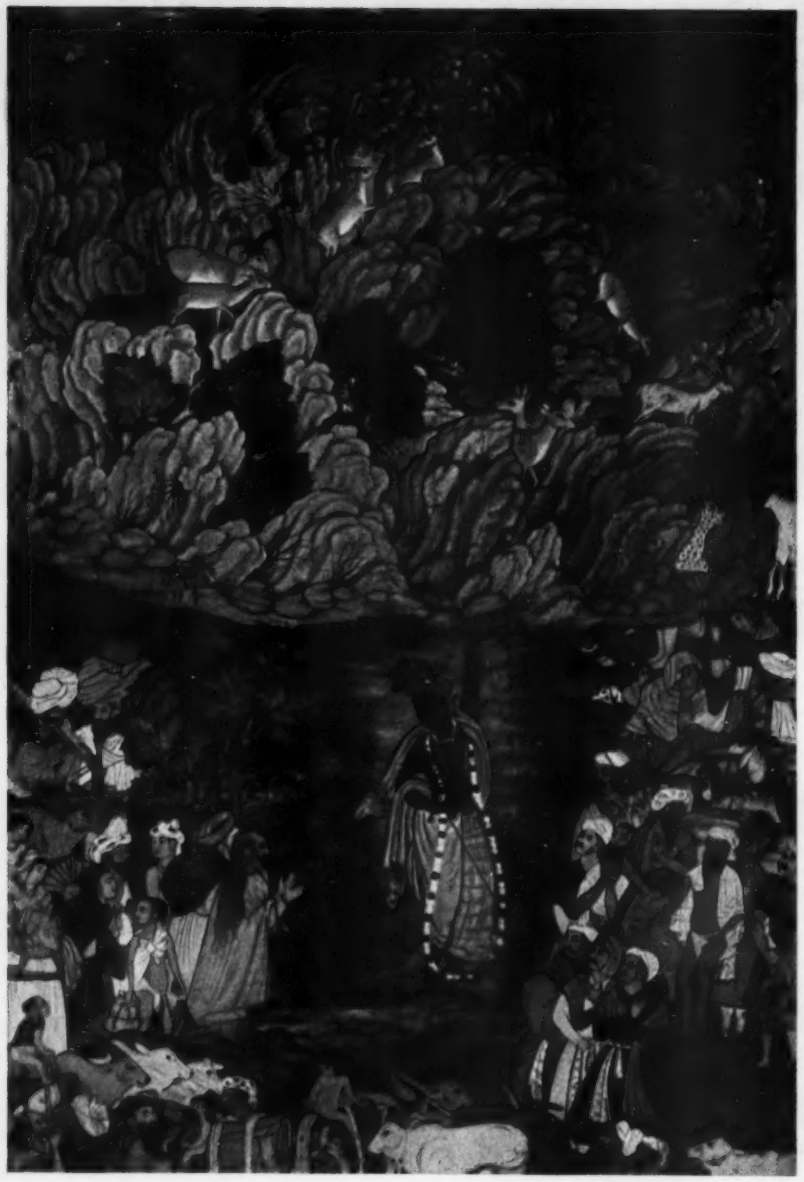
It is possible that the matter of washability is one which calls for industry policing, lest the few contaminate the many. To a major degree the cotton industry has achieved stability in the spheres of fast color and pre-shrinking; most manufacturers have learned the advisability of spending a few pennies more per unit to eliminate far more expensive returns from dissatisfied customers. But the rayon field still has far to go in this direction, although the more progressive manufacturers of both rayon fabrics and rayon merchandise are well along the way.

The Need for Truly Washable Fabrics

When a woman finds, to her dismay, that the first rayon slip or shirt washes badly she is suspicious of any other rayon product, no matter whose label or guarantee is proffered. The makers of soaps and detergents, the Soap Institute and the American Institute of Laundering have done yeoman service on their side; now it is up to the producers and finishers of textiles to match them with truly washable textiles. If, as the economists predict, this nation will be running at a peak productive capacity with 68,000,000 workers, then the housewife will have neither the time nor the patience to give special laundering care to different wearing and household articles; everything will have to go into the washing machine, and everything had better be prepared for such treatment without possibility of dire consequences.

* * *

That is why we recommend to the textile industry's leaders that they truly evaluate the ultimate consumer not as the wearer but as the *washer* . . . because the behavior of any cloth in the washing machine will determine its future selling possibilities.



KRISHNA LIFTING UP MOUNT GOVARDHAN *Courtesy of the Metropolitan Museum of Art*

Covet not the gold-threaded coat,
Grasp the years when you are young,
When the flowers open, come pluck them,
Do not wait to gather a spent spray from an empty bough.

ORGANIC DESIGN TESTED OVER THE CENTURIES

Perhaps this is the time for our designers to revert to the simplicity of line and of manufacture which eliminates costly and complex operations. The orient offers a concept of basic design which holds tremendous possibilities for the western world.

IN THE PAGES WHICH FOLLOW we reproduce costumes from the East and Near East which date back many, many centuries in origin . . . but which embody such essential and serviceable design elements that, even today, they are worn by millions of people. They are not suggested as styles which should be copied literally for wear in this country, but rather as a starting point from which nimble designing minds can leap to typically American fashions. However, the common basic factor of simplicity evident in all of these sketches should be closely studied.

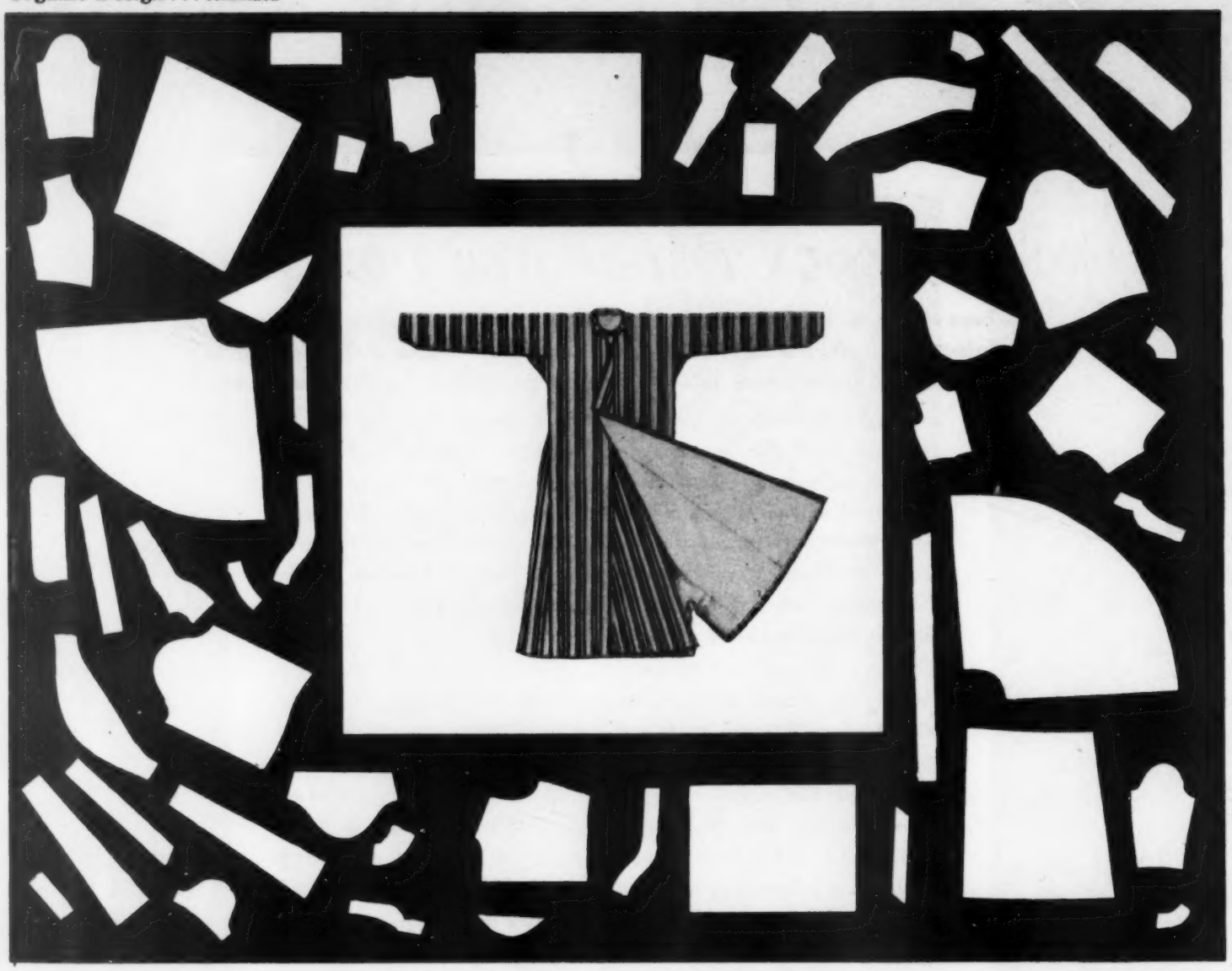
The essential cut is of the simplest order; individuality is attained by such devices as novel necklines, unusual sleeves and types of closures . . . and, of course, attractively designed fabrics.

Complex as some of today's creations may be, in few cases does a dress so effectively highlight the feminine figure as did the gracefully draped garments of ancient times. Is it not possible, then, that the addition of such mechanical devices as tucks, darts, pleats and pads which are used today to emphasize or minimize anatomical points might be curtailed or eliminated?

In leisure wear, particularly, it is noticeable that manufacturers go to extremes in expense to build garments which not only do not call for intricacy of design but in many cases nullify the practical value of the garments themselves. Would it not be good sense for a designer to begin with the elementary question: How simply can this garment be designed to perform its functional task for the wearer?

It is not our intent to lead the designing of apparel toward standardization. On the other hand, we suggest that manufacturers might well study the ancient costumes which have proved their soundness through many centuries, as a possible source of inspiration. It may lead to a wider concept of simplicity and good taste generally with styling which can be mass-produced at a lower cost. *(please turn the page)*

Mid-Caucasian shirt and vests, Kurdish and Aisorian style



IS DESIGN FOR MODERN DRESS READY FOR A REVOLUTION?

. . . a Question Manufacturers Should Ponder

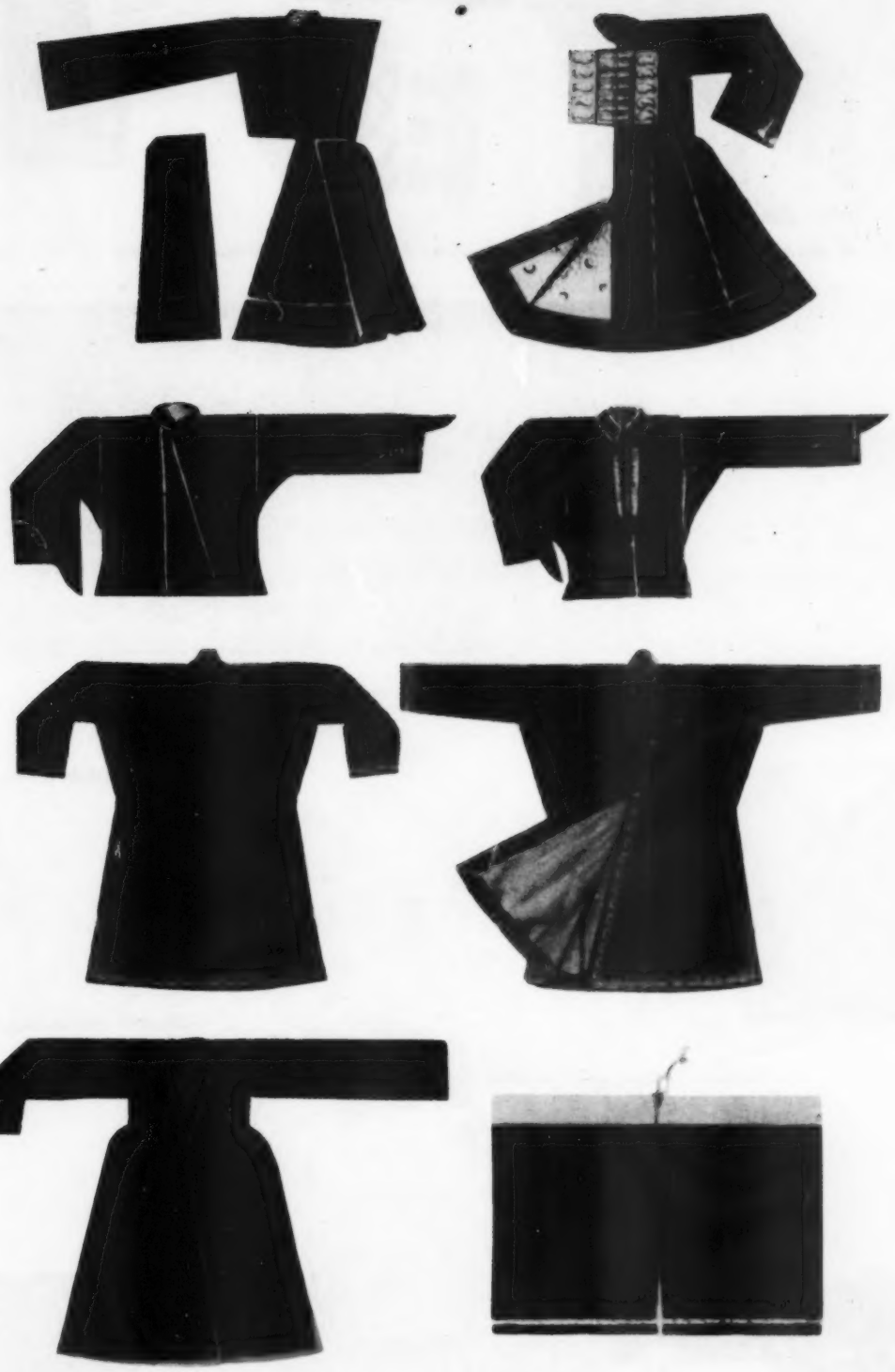
While all the world marvels at the wonders of American fashion mass-production methods, and while these have undoubtedly made it possible to raise the fashion standard of the masses . . . manufacturers in some quarters are beginning to wonder whether they cannot reduce the complexity in dress design, and thus increase the margin of manufacturing profit.

It is well known that many costs, concealed to the consumer, go into the making of a woman's dress between the time it leaves the designer's room and enters the retail store's fitting room. First comes the pattern-maker's chore of breaking down the over-all style into the lowest possible number of separate sections for cutting and sewing. Then comes the procedure of making the *marker* . . . laying out the individual pattern sections so that they *lock together* to use the lowest possible yardage; when the sections are placed, they are outlined with heavy pencil or chalk on a special type of paper, the paper is spread over the required number of fabric layers, and the cutter uses either hand scissors or an electric knife to cut the fabric according to the outlines. The next step is that of sewing the individual pieces together to make the dress.

A simple dress may take 27 pieces; a complex style may run into any number of sections. As the number of sections is increased, so are the costs of cutting and sewing. With the cost of labor steadily rising, it is obvious, then, that the dress manufacturer must be seriously concerned with the question of how to reduce the number of individual operations.

There can be no debate over the subject of apparel designing's increased complexity. Since the development of mass-production methods and equipment, competition has prodded manufacturers into designing and manufacturing garments of greater and greater intricacy, with resultingly greater and greater costs. If at the end, the consumer were presented with a garment which rendered precise fit, there might be little room for questioning today's manufacturing methods. But such is far from the case; cursory observation reveals the extent to which the retailer and the consumer go to alter garments to the individual's figure requirements to indicate that much of the work and cost which are entailed today in cutting and sewing a garment is duplicated at the retail point of sale.

Since this is so, then is not the manufacturer entitled to think in terms of reducing his cutting and sewing costs? And since labor costs can not be reduced (per operation), what alternative faces the manufacturer other than simplification of basic design?



Traditional costumes receive their quality of ease and style from a simplicity achieved during centuries of discriminating design.

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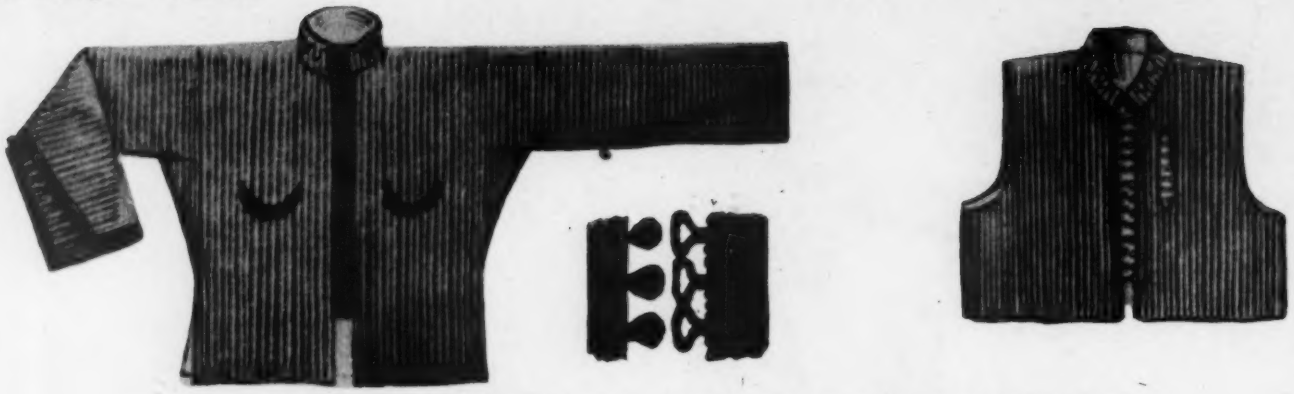


Vest and jacket from Baghdad showing decorative details . . . a type worn throughout the Near East

A tent with rustling breezes cool
Delights me more than palace high,
And more the cloak of simple wool
Than robes in which I learned to sigh.

The crust I ate beside my tent
Was more than this fine bread to me,
The wind's voice where the hill path went
Was more than tambourine can be.

MAISUN, EARLY ARAB POETESS, REARED IN THE DESERT, AFTERWARDS WIFE OF THE CALIPH MU'AWIYA.

. . . the designers of the traditional costumes of the East attained manufacturing simplification without sacrifice of either line or beauty. Their technique is worthy of the costume designer's study today.

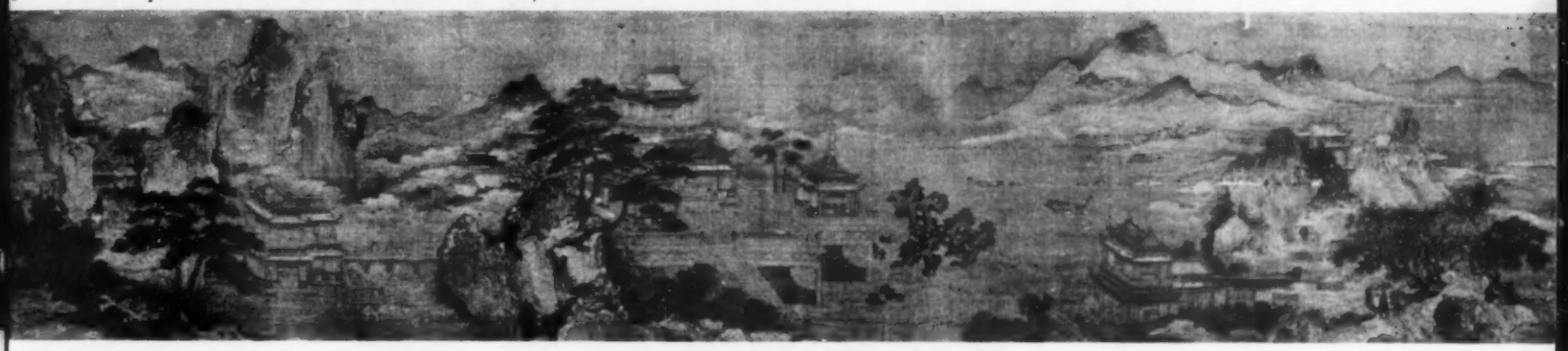
Tunisian jacket (*rulila*) showing front and back, and cap worn with it

Samarkand woman's robe with Paisley motifs

Sart man's shirt from Bokhara

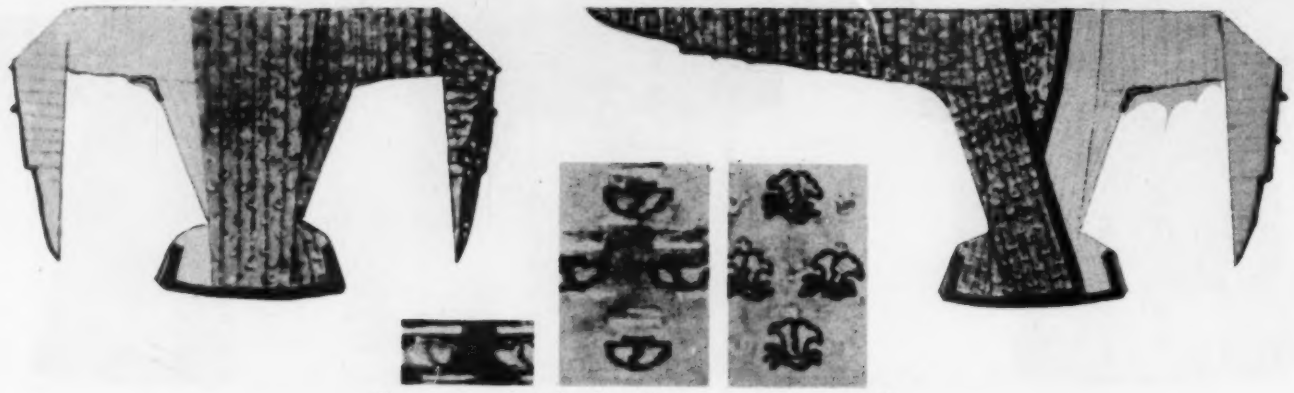
Kashmir official's robe; green with rose binding, Paisley motif

Turkestan woman's robe



SPRING MORNING AT THE PALACE OF THE HAN EMPERORS — ATTRIBUTED TO CHAO PO-CHU (1130-1160)

Kutcha from Chinese Turkestan, with assymetrical neckline



Tartar woman's jacket from Daghestan, Persian in style

Turkestan woman's robe; red velvet with silver embroidery

Different types of peasant national dress from the Caucasus

I dismount from my horse and drink your wine,
I ask you where you are going.
You say you are tired of life
That you go to lie on the slopes of the Southern hills,
And I feel I need ply you with no more questions.
The white clouds that float endlessly by there will separate you from the world of men.

WANG WEI, T'ANG DYNASTY (600-900 A.D.)

Paisley viscose rayon print
with companion Kashmir colors
by MALLINSON

PAISLEYS PROCEED TO RETAIL LEVEL

IN COUNTLESS SHOWROOMS, buyers and merchandisers are now viewing the industry-wide array of Paisley designs with an eye to coming sales. It is not altogether because of the comparative quiet which prevailed in the textile and fashion markets during the past few months that Paisleys are expected to create a wide splash. Rather, it is because with the experience of such creative projects as Clan Tartans and District Checks behind them, the manufacturers of both fabrics and fashion goods know that a theme which is organically sound and aggressively promoted can do much to stimulate business and to create additional activity where the pace is sluggish.

* * *

For almost a year the Editors of AMERICAN FABRICS have been working with top level mills and converters, manufacturers and retailing executives, to pave the way for the 1952 promotion of Paisleys. Literally thousands and thousands of Paisley designs were created; some faithful copies of famous old Kashmiri motifs, others new American versions based on classic themes and translated in wool, silk, cotton, nylon, rayon and linen, in printed and woven versions.

* * *

Now they are being shown, in the form of finished merchandise for men, women, children and the home; and if the first reactions from major buyers may be held up as a criterion, it is probable that the promotion of Paisleys as a nation-wide fabric fashion will surpass any similar merchandising event since the advent of Clan Tartans. Paisleys are catholic in appeal; they are being sold at all levels of the fashion economy and in all types of merchandise. If present indications are borne out, the coming year may go down in retailing records as *The Paisley Year*.

Paisley viscose rayon challis
by FULLER FABRICS

Paisley all-wool challis
by TEXTILE LOOMS, INC.
(retail distribution by Bart Schwartz)

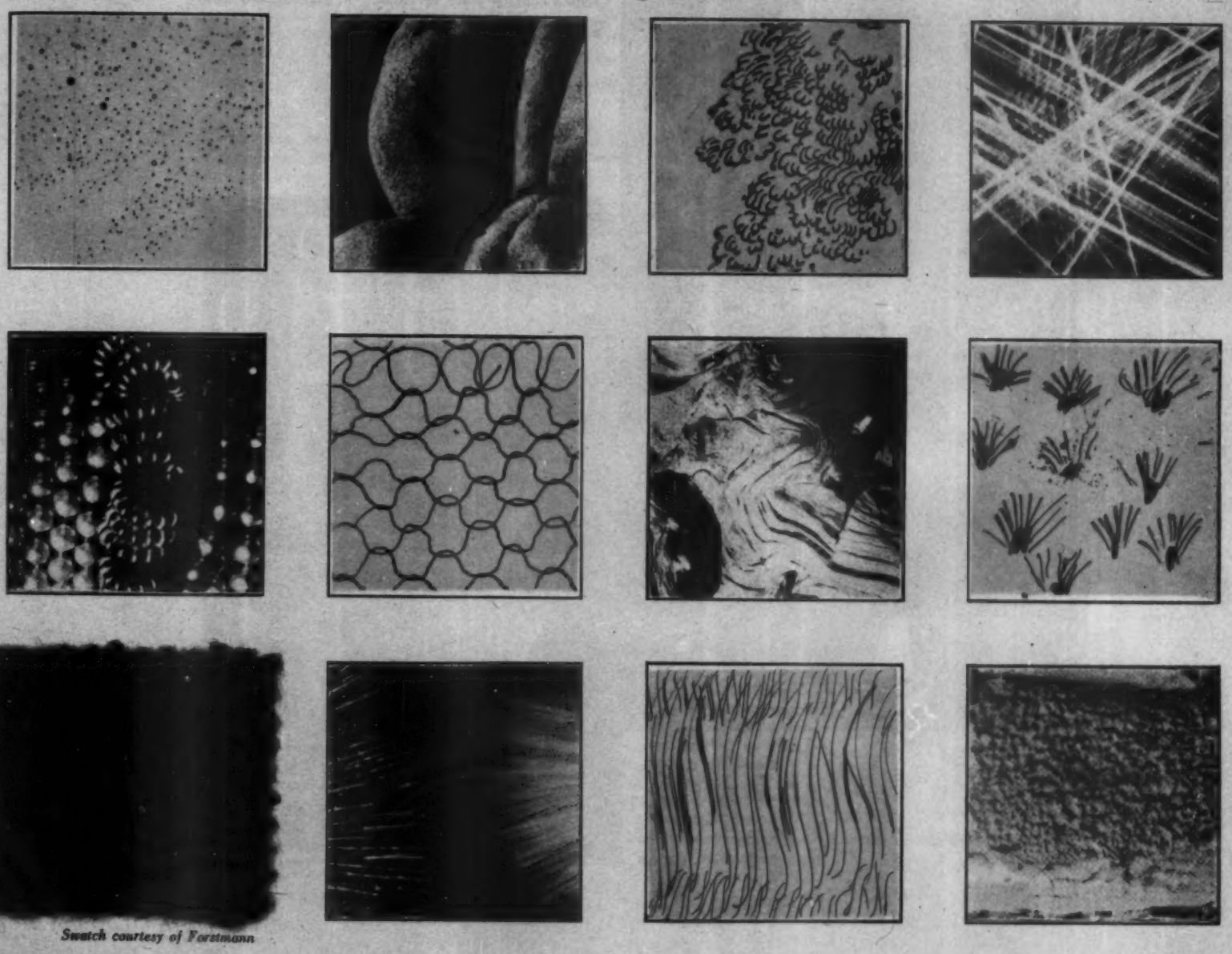
Every emotion and mood has a corresponding tactile value which, by touch of hand or by interpretation through the eye, brings that mood or emotion into play.

The great artists made superb use of textural qualities in their models to evoke the emotional flavor which they wished the spectator to enjoy. Each line of a Raphael portrait, of a Leonardo plant, of a Rembrandt landscape builds up such values.

In fashion fabrics, while the construction gives many necessary qualities of strength and durability, it is the visual effect of texture and its feel in the hand which give the garment individual appeal. An example of textural values in woolens today is the pile construction which imparts a quality of depth to the fabric.

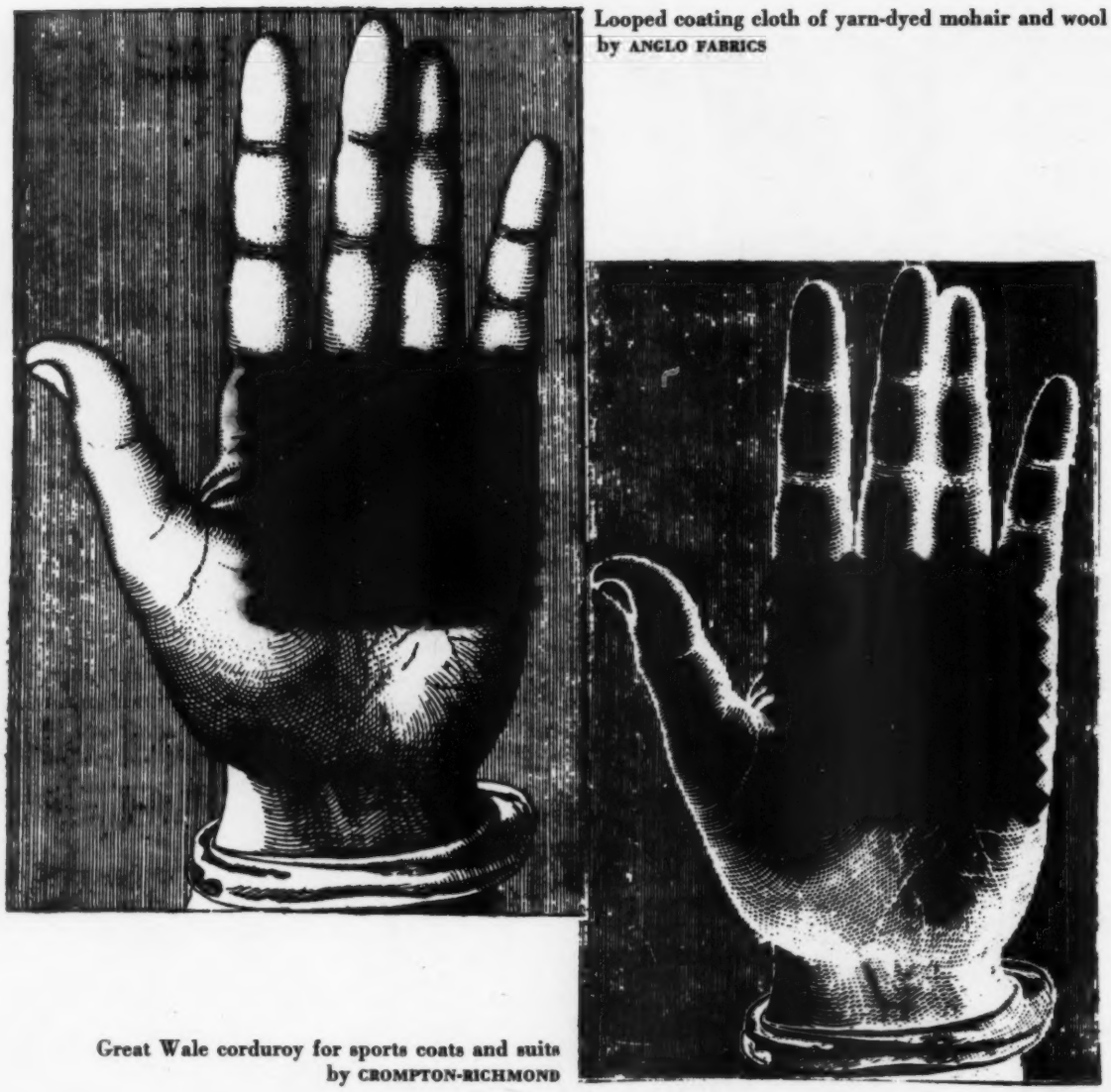
On the opposite page is a series of random markings suggesting the grain of wood, of sand, the movement of foliage and other common things. Such a shorthand is quickly picked up and interpreted by the eye.

TEXTURE IN A FASHION FABRIC. *The clipped curly look of the French poodle has been reproduced in fabrics with many variations. The character of these coatings suggests a new field of design interpretation.* MIRRAK MIXTURE, *by Forstmann, is a yarn-dyed fabric with the dense, soft pile of fur, but with the pliancy found in luxury wool cloths. The fabric is woven with worsted and wool yarns on a hardy basic pattern, with a loopy curl covering the surface. Some alpaca and mohair have been added which impart a melting hand and resiliency, as well as added dimension to colors and mixtures.*



Swatch courtesy of Forstmann

TOUCH and TEXTURE



Looped coating cloth of yarn-dyed mohair and wool
by ANGLO FABRICS

Great Wale corduroy for sports coats and suits
by CROMPTON-RICHMOND

A FABRIC FASHION TURNS BACK to the TWENTIES

While in recent seasons the consumer greeted mannish suitings with enthusiastic acceptance, her preference for more feminine appearance prompts the renaissance of failles and ribbed textures with a round-the-clock look.

WHEN THE FASHION INDUSTRY first conceived the idea of using mannish suitings for women's clothing, the majority of consumers expressed complaisance over the constructions and continued to wear and enjoy them for several years. In the present season sensitive stylists have felt that a more feminine weave with distinctive construction was really what women would like, and they pointed their thinking in this direction for the Fall 1951 season.

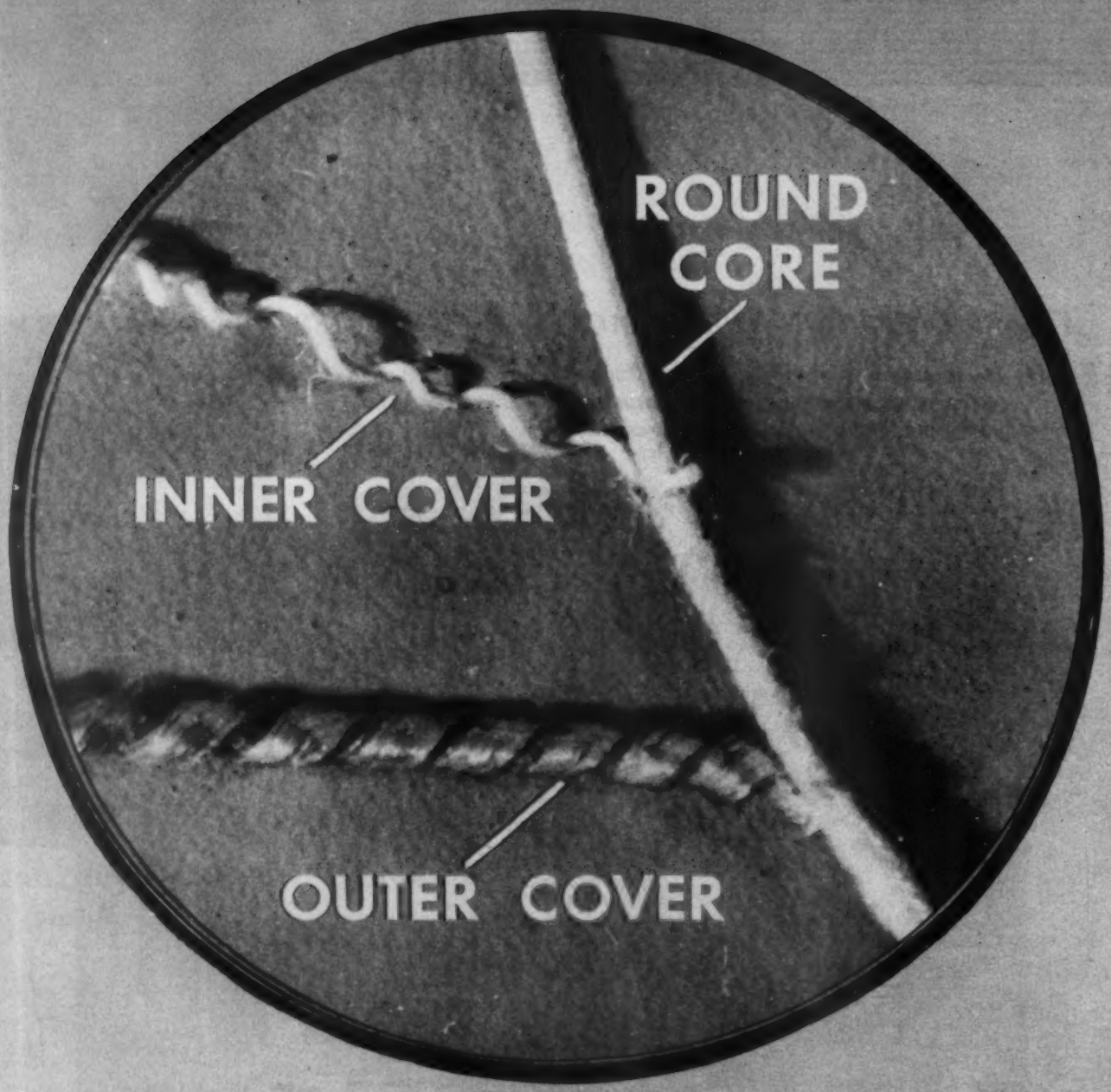
Typical of the American textile industry's fashion adaptability is the current introduction of an old-new type of suiting fabric. Delving into the past of fashion successes, they discovered that an outstanding type of cloth, one which attained the greatest adaptability, was the grosgrain or faille weave which was so important during the early 1920's. This weave is closely akin to the Mogador type of construction which was popular in men's striped neckwear of the same period in fashion.

They set about to accomplish with a blend of acetate rayon and cotton what had been attained by the use of silk and cotton. Because textile chemists are so adept in engineering the various fibers to any specific end use, they achieved their objective with an excellent group of fabrics which are currently available for manufacturing.

Through the use of these new cloths women will now have town suits with what can be called the *Silky Look* or, as Cohama terms it, the *Polished Look*. Because of its nature, the fabric lends itself to the type of suit which a woman can wear throughout the day and then into the evening for informal occasions; obviously this functional performance increases its value and appeal. It is heavy enough to wear without a coat; yet, in colder weather, its wrinkle-shedding and shape-holding qualities make it a sound fabric for wear under furs or heavy coats.

While it is in no way anticipated that the softer constructions of rayon suitings will lose their place in the important fashion picture, designers have already expressed their opinion that the new *Polished Look* type of fabric is so functionally suited to a definite need that the coming season should mark the beginning of a rather extended period in which women will favor ribbed or Mogador-type suitings. They see these cloths as creating a market for an *extra* garment in many women's wardrobes at the outset; should it become the most favored cloth, it will be because women indicate their preference in that direction and the industry will pattern its productive thinking to match the consumer's expressed taste in fashion fabrics.

Fabric by Cohama
Suit by Goldberg-Weisman, Inc.



An extruded core of pure latex of the required fineness and elasticity is wrapped in two covers of textile fiber to create a stretchable textile yarn suited for either weaving or knitting.

THE INSIDE STORY OF LASTEX

The development of Lastex from its discovery in 1925 to its present status indicates that a new concept of comfort and conformity is at the designer's fingertips in the unique sphere of elastic textiles.

Ficus elastica from the East Indies

STRETCHING AROUND the Equator, various types of rubber trees are found in the intense heat of the tropics. The first known species were discovered in the Brazilian jungles; there the early white explorers noticed that native men and children played games with blobs of resilient material which bounced when thrown against the ground or against a solid object. Curious, they learned that this material was the dried mass of the sap (latex) which came from a slim tree called the *siphonia elastica;* and they took specimens back to Europe in the 16th Century.

Later it was found that other trees yielding a similar type of sap grew wherever intense heat and lush vegetation prevailed. In the East Indies, and especially in the Malay Archipelago, they grew in great profusion. But although men of science strove earnestly to find a way to convert the unique resilient qualities of the sap to commercial purposes, it was not until 1844, when Charles Goodyear perfected the process of vulcanizing, that the world began to benefit from what we now commonly term rubber. Instantly there was a frenzied scramble among large industrialists to utilize his process, but in a memorable trial in 1860 Daniel Webster defended Goodyear's patents successfully.

Already at that time an inventor had hit on the idea of cutting sheet rubber into strands, and then wrapping each strand in cotton to form a yarn; but this process was handicapped by the relatively thick gauge, below which the rubber could not be sliced by any existing machinery. But in 1925, while experimenting with natural latex, researchers in the laboratories of the United States Rubber Company learned that they could *extrude* the latex in the form of a round thread of almost any desired fineness; furthermore, they discovered, they could control the elasticity and resilience of the latex fiber to obtain as great or as little stretch and recovery as might be desired.

This was the beginning of a new phase in the history of textiles; and when, in 1931, the U. S. Rubber Company launched the new elastic yarn with the trademark Lastex, it marked the threshold beyond which lay unsuspected developments. The first Lastex yarns were used in women's foundation garments and in surgical hosiery; both of these types of merchandise were manufactured by knitting. Following these in rapid succession, the cooperative efforts of U. S. Rubber Company researchers and the best brains of progressive mills brought forth an infinite variety of Lastex yarns and new elastic textiles.

Its very physical characteristics make latex the most adaptable of raw materials; by varying and combining the dimensions or content of latex thread with different types of inner and outer fiber coverings, yarn with an extruded core is today opening the door to virtually every type of fabric goal. Such yarn can apparently be engineered to almost any requirement; and as a result the textile industry has been able to market fabrics of unique conforming and comfort features. Among the classes of goods in which elasticized fabrics have already found application, may be mentioned products for the industrial field, surgical goods, foundations, underwear and hosiery, shoes, sportswear and bathing suits, dress accessories and notions, and, most recently, slip covers for upholstered furniture. Thus, this already wide field is constantly increasing. Hardly a segment of the fabric world is without the benefits of elastic yarns; and if the products of past achievement are any indication, elasticized fabrics will ultimately be in universal use.

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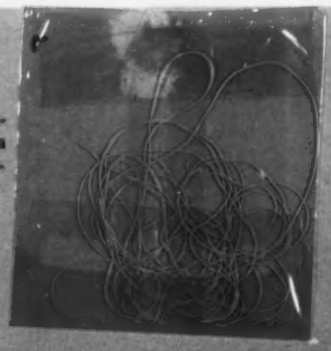
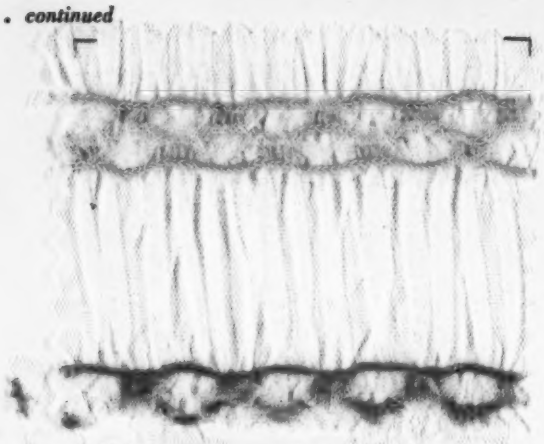


Many scientific inventions contributed to the extrusion of a core of controlled stability, fineness and stretch. The envelope contains the round core, shown in the microphoto opposite.

***Lastex** . . . continued*



Nylon net by GEHRING TEXTILES, INC., Lastex-shirred by BRATMAN BROS.

EVER SINCE MAN first considered clothing as adornment rather than in a purely functional aspect of protective body covering, he has attempted to design and construct apparel in such a way as to obtain lines which follow the contour of the body. In truth, much of the cost in both time and effort required to design and piece together the average item of apparel is devoted to artificial and often mechanical methods of achieving such an effect; and yet, to the sorrow of both the manufacturer and the wearer, so many are the individual variations in the anatomy's proportions that often the desired results of using darts, tucks, shirrings and other devices are nevertheless nullified by the need for alterations.

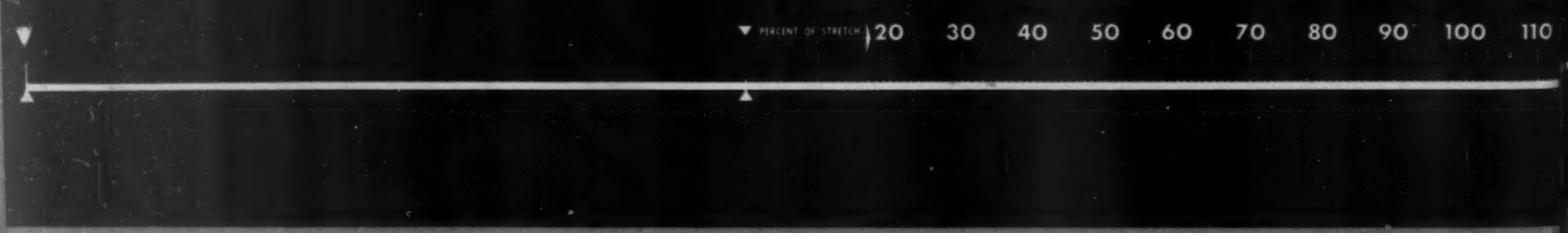
For uncounted centuries of the weaver's art, the problem of fit had been left to the ingenuity of both the garment manufacturer and the wearer. Two desirable qualities . . . stretch and tension . . . which are found in rubber-cored yarns are the factors which have been scientifically added to the innate characteristics of yarns to solve the problem of fit. Where they can be incorporated, apparel fabrics with either a one-way or two-way stretch can be perfectly adapted to the specific clothing requirement.

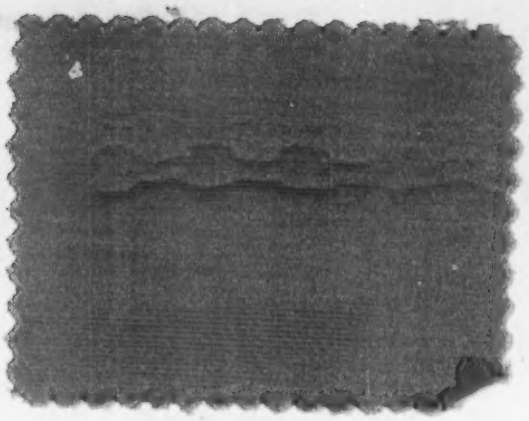
Thus, through the development of a broadened range of new elastic yarns, mills have succeeded in weaving and knitting fabrics which carry within themselves the basic ingredient of figure-conformity without undue or uncomfortable stress. It has become possible, on the one hand, to produce a diaphanous cloth for lingerie; at the other extreme, millions of pairs of human feet will be more comfortably and adequately held in shape because of elastic yarns woven into shoe linings and laminated to leather.

MAKE THIS STRETCH-TEST YOURSELF

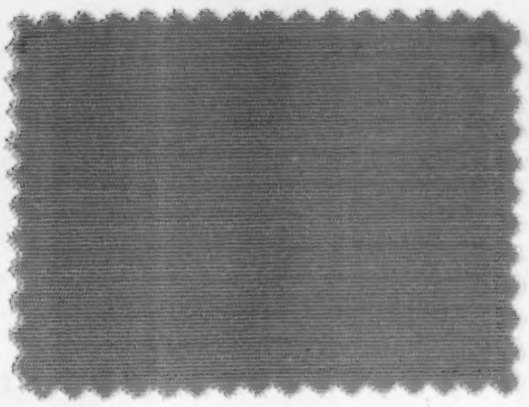
Hold one end of each Lastex thread firmly at the left end of the scale; then pull it as far to the right as it will reach without breaking. The point

Medium stretch weaving yarn; high stretch yarn for hosiery tops



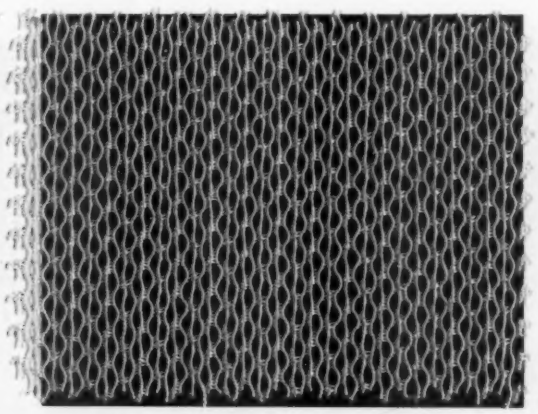


Satin with Lastex and cotton filling by H. WARSHOW AND SONS, INC.



Leno woven with Lastex and nylon yarns by ANSONIA MILLS

. . . every variety of tension for the specific fabric requirement



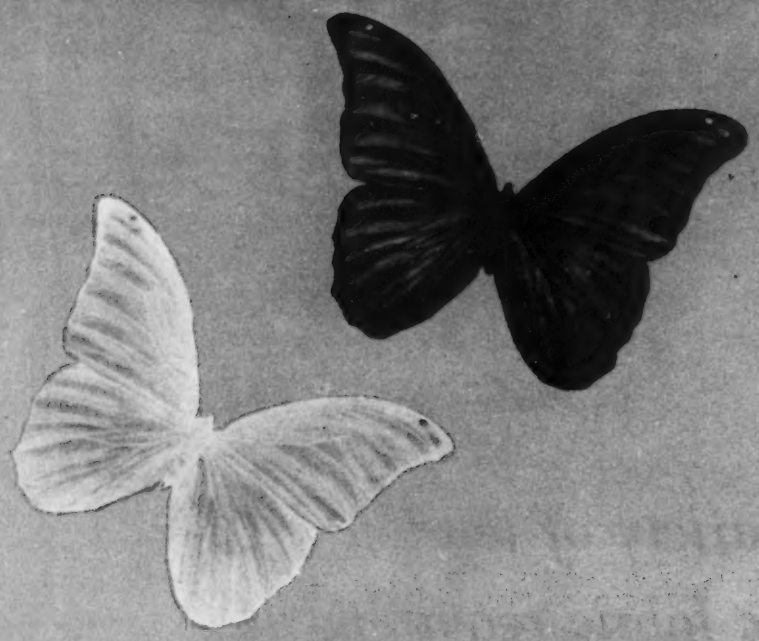
Fishnet of Lastex and nylon by NATIVE LACES AND TEXTILES, INC.

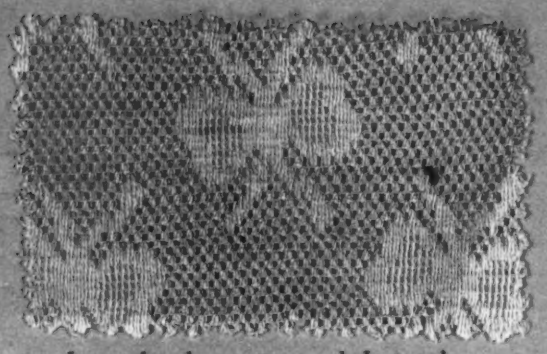
Gabardine shoe fabric elasticized with Lastex by ALFRED VAMOS, INC.

. . . see how different Lastex yarns vary in elongation

at which it stops stretching indicates the percentage of elongation in the specific Lastex construction. Depending upon functional requirement, different Lastex yarns stretch as much as 375% of their original length!

110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330





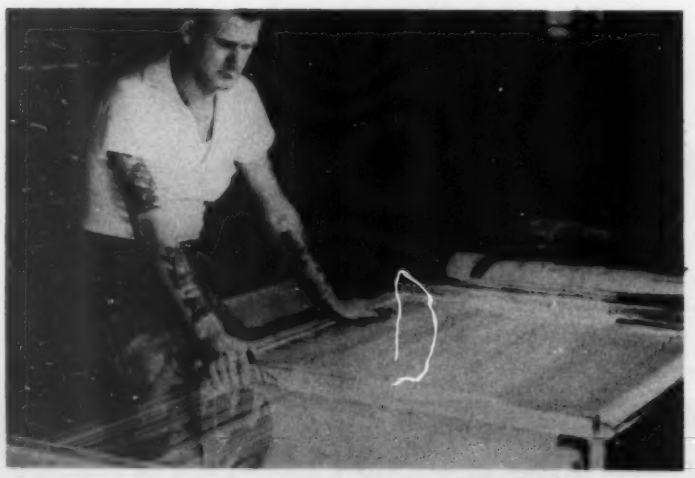
Lace of nylon, cotton and Lastex by
THOMAS WILSON AND CO., INC.

Control from the most

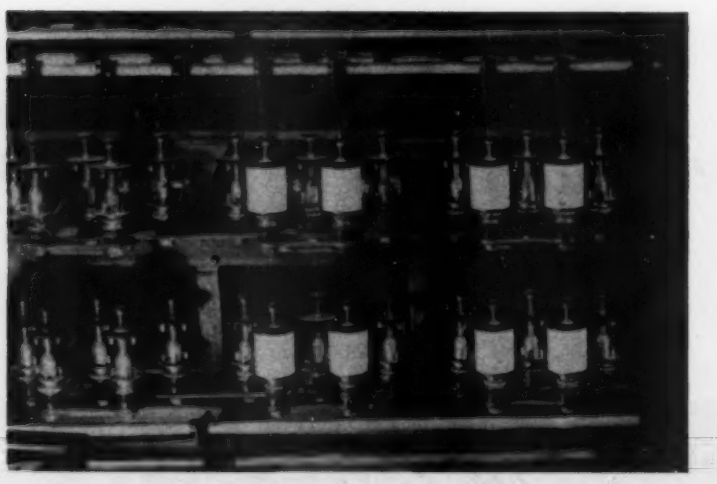
The use of Lastex yarn has enabled weavers and knitters to develop fabrics of incredibly varied character. The previously unattainable ingredient of conformity, plus the practical value of the qualities of tension and elongation, endows cloths with mechanical properties which

Key Stages in the Manufacture of Lastex

1. From a spiral cut in the bark of the rubber tree the latex runs down a gutter into the bowl

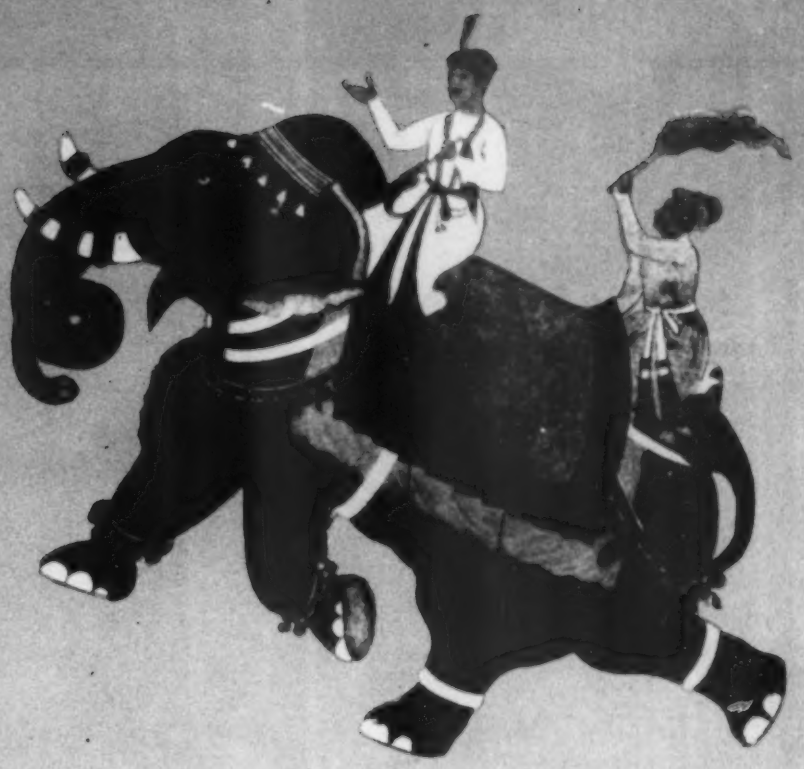


4. After extrusion the fine threads travel through the curing oven and are then carefully inspected



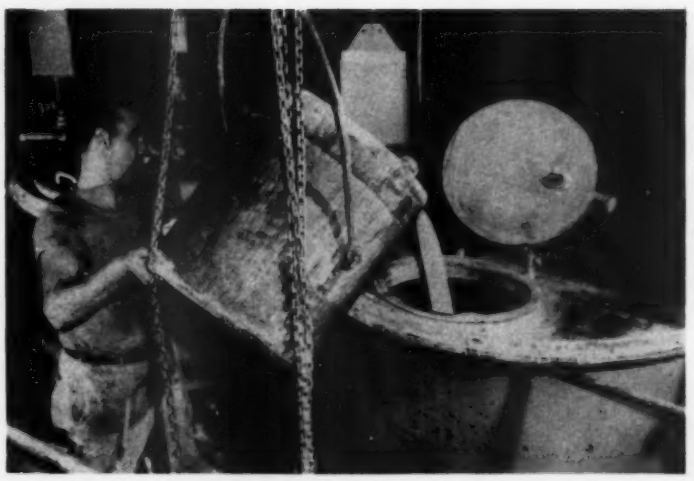
5. Inner and outer covering are wrapped around the core. Fiber and twist are chosen for specific end use

Two-way stretch power bobbinet of Lastex
by LIBERTY FABRICS



delicate to most rugged

easily solve problems that faced technologists in former years. At one extreme they can now produce a gossamer elastic sheer with enough strength to provide satisfactory service; at the other, a cloth of great required durability is now made flexible rather than constricting.



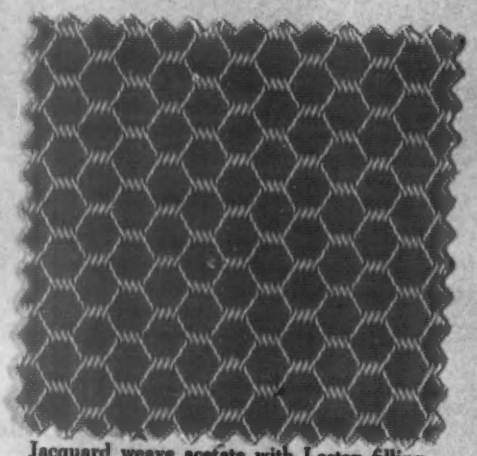
2. Latex must be properly blended with age-resisting chemicals to make high-quality core

3. The chemist checks samples of latex, compounded for conversion into fine strands, to ensure standard

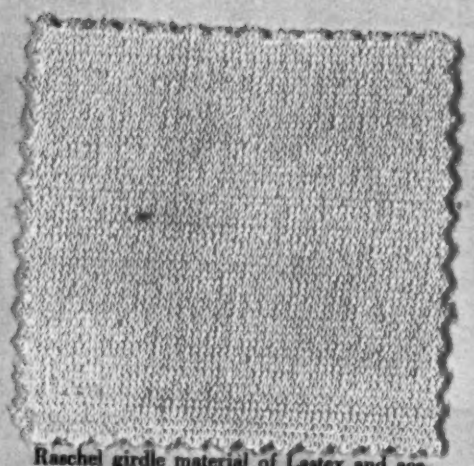
6. The elastic yarn is woven into broad or narrow goods of every type for which an elastic application exists

7. Other fabrics are elasticized by shirring the backs with elastic yarn on multi-needled machines.

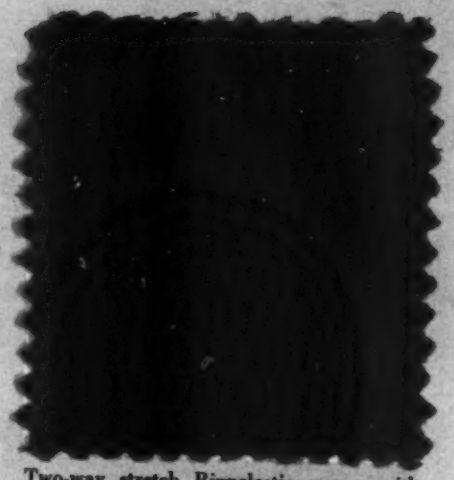
Lastex . . . concluded



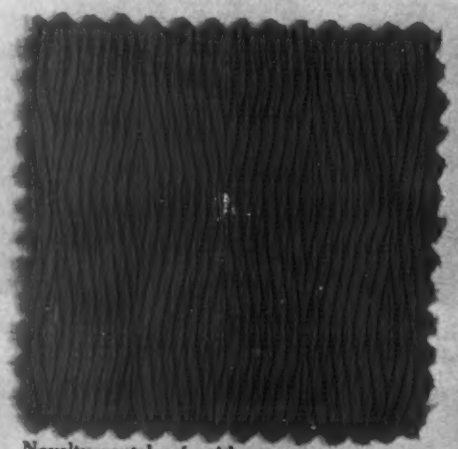
Jacquard weave acetate with Lastex filling by ROSENSTEIN BROS.



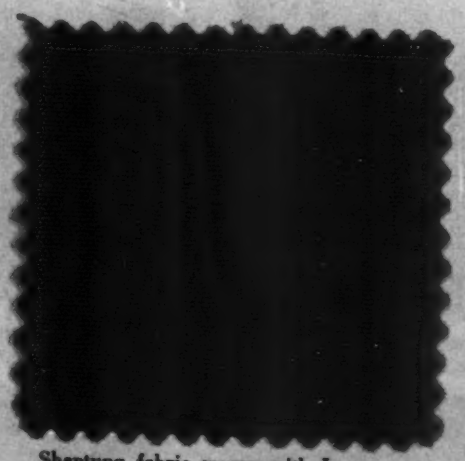
Raschel girdle material of Lastex and acetate by IDEAL MILLS



Two-way stretch Rippelastic woven with Lastex yarn by BATES FABRICS

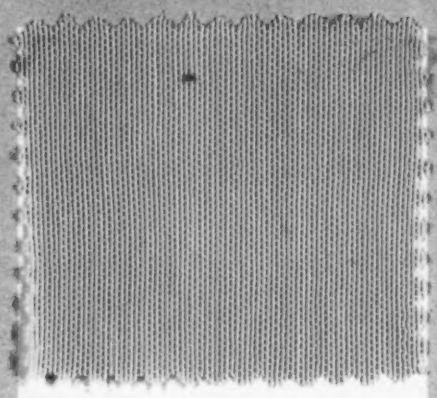


Novelty matelassé with acetate warp and nylon, cotton and Lastex filling by FAB-TEX



Shantung fabric woven with Lastex yarn by HAFNER

Pebble-surface Lastex and cotton fabric by ATLANTIC KNITTING MILLS



Power bobbinet of nylon and Lastex by THOMAS WILSON AND CO., INC.

Metallic woven plaid by GALEY AND LORD, Lastex-shirred by HARTMANN EMBROIDERY

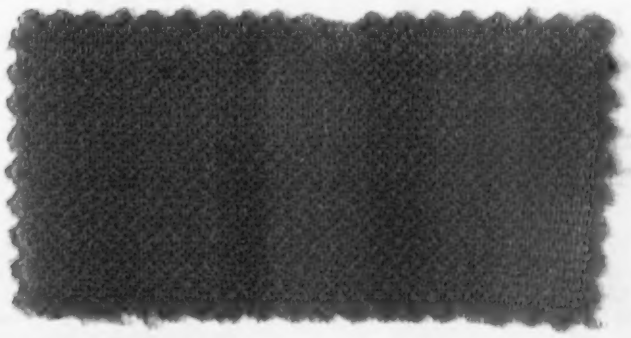
ENGINEERING to an END

Typical of the manner in which U. S. Rubber Company approaches the problems of end-use manufacture is this case history of how the right type of Lastex yarn was developed for use by Jantzen in creating a novel type of swimsuit fabric. It begins with a manufacturer's idea; it concludes with a practical, profitable fabric.

For some years prior to 1940 the Style Development Department of Jantzen Knitting Mills had envisioned a knitted swimsuit fabric which would look like velvet or sealskin and which would still have the necessary stretch, fitting quality and wearability which they considered essential. Some experimental fabrics had been made on jersey equipment using both fine zephyr and rayon yarns and similar in construction to a fine terry; but these materials were not suitable for water wear. The problem of making such an ideal fabric practical was raised with the makers of Lastex with the specifications that such a yarn be of the right size to run on 20 cut Wildman jersey machines and to be knitted in conjunction with 150 denier acetate rayon and single 30s cotton.

* * *

For this purpose a Lastex construction was made with a 90s core and both inner and outer covers of 1 end of single 50s cotton. The yarn was constructed with an elongation of 200% so that the final fabric would have adequate stretch for swimsuit sizing and would, at the same time, have enough tension or power to make the fabric fit well when wet as well as dry. The Lastex yarn with these construction details ran 4300 yards per pound and it was tried out in actual swimsuits. The fabric proved most acceptable and became a large volume seller which, currently, is popular under the trade name of Luravel.



Luravel swimsuit fabric by JANTZEN KNITTING MILLS

1. Undisciplined

With his horns fiercely projected in the air the beast snorts,
Madly running over the mountain, farther and farther he goes astray!
A dark cloud is spread across the entrance of the valley,
And who knows how much of the fine fresh herb is trampled under his wild hoofs!

The ox represents man living in a frenzy of activity. He has lost contact with his inner self, the herdsman.

2. Discipline Begun

I am in possession of a straw rope, and I pass it through his nose,
He makes a frantic attempt to run away, but he is severely whipped;
The beast resists with all the power there is in a nature wild and ungoverned,
But the oxherd never relaxes his pulling tether and ever-ready whip.

The rope is the mind, the whip discipline; by these means the true self can master and train animal nature.

3. In Harness

Gradually getting into harness the beast is now led by the nose,
Crossing the stream, walking, he follows every step of the leader;
The leader holds the rope tightly in his hand never letting it go,
All day long he is on the alert almost unconscious of what fatigue is.

Gradually, through watchfulness over one's self, the animal nature is trained and can be led in docile obedience.

7. Laissez Faire

The spring stream in the evening sun flows along the willow-lined bank,
In the hazy atmosphere the meadow grass is seen growing thick;
When hungry he grazes, when thirsty he quaffs, as time sweetly slides,
While the boy on the rock dozes for hours not noticing anything about him.

With appetites trained to moderation, man goes about his daily activities without restraint and with inward peace.

8. All Forgotten

The beast all in white now is surrounded by the white clouds,
The man is perfectly at his ease and carefree, so is his companion;
The white clouds penetrated by the moonlight cast their shadows below,
Clouds and moon-light — each following its course of movement.

A change begins to be seen in man's nature; it appears purer and more radiant, on a higher plane.

9. The Solitary Moon

Nowhere is the beast, and the oxherd is master of his time,
He is a solitary cloud wafting lightly along the mountain peaks;
Clapping his hands he sings joyfully in the moon-light,
But remember a last wall is still left barring his homeward walk.

Transformed, man's animal nature no longer is manifest. He now reaches his highest state of development.

4. About Face

After long training the result begins to tell
and the beast is faced round,
A nature so ungoverned is finally broken,
he has become gentler;
But the tender has not yet given him his
full confidence,
He still keeps his straw rope with which
the ox is now tied to a tree.

Though the mind is still necessary to control man's nature, the latter is becoming more easily controlled.

5. Tamed

Under the green willow tree and by the
ancient mountain stream,
The ox is set at liberty to pursue his own
pleasures;
At the eventide when a grey mist descends
on the pasture,
The boy wends his homeward way with
the animal quietly following.

Now the animal is obedient to the voice of the herdsman and can be trusted to follow even without the rope.

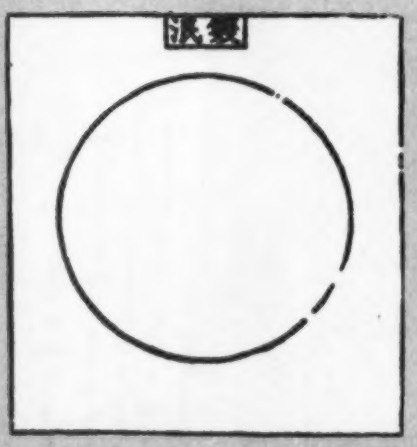
6. Unimpeded

On the verdant field the beast contentedly
lies idling his time away,
No whip is needed now, nor any kind of
restraint;
The boy too sits leisurely under the pine
tree,
Playing a tune of peace, overflowing his joy.

Surrounded by the world, man lives in perfect harmony with a nature that is disciplined. New possibilities open.

MAN AND SELF-CONTROL

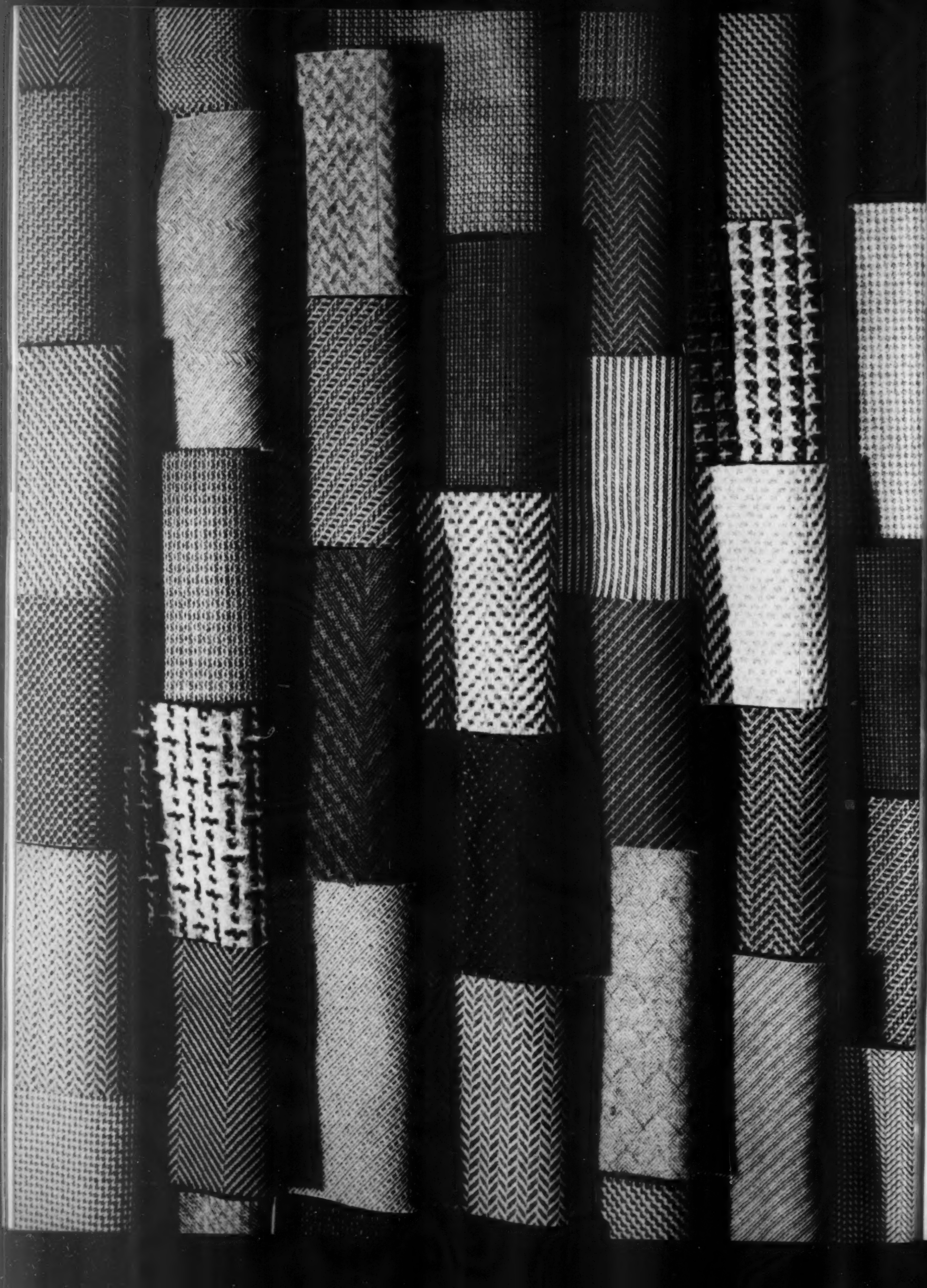
Throughout the centuries all religions, all teachings have stressed the fact that man has certain possibilities which can be realized through self-knowledge and self-control. The famous Ten Ox-Herding Pictures graphically express this idea. During the five centuries in which these pictures have been current in China, their simple and direct imagery has made a deep appeal and they have come to be recognized as a profound expression of human thought. The series reproduced on these pages was drawn by an unknown artist of the 16th century.



10. Both Vanished

Both the man and the animal have disappeared, no traces are left,
The bright moon-light is empty and shadowless,
If any one should ask the meaning of this,
Behold the lilies of the field and their fresh sweet-scented verdure.

The parable is complete; man has fulfilled himself; the mystery of creation alone remains.



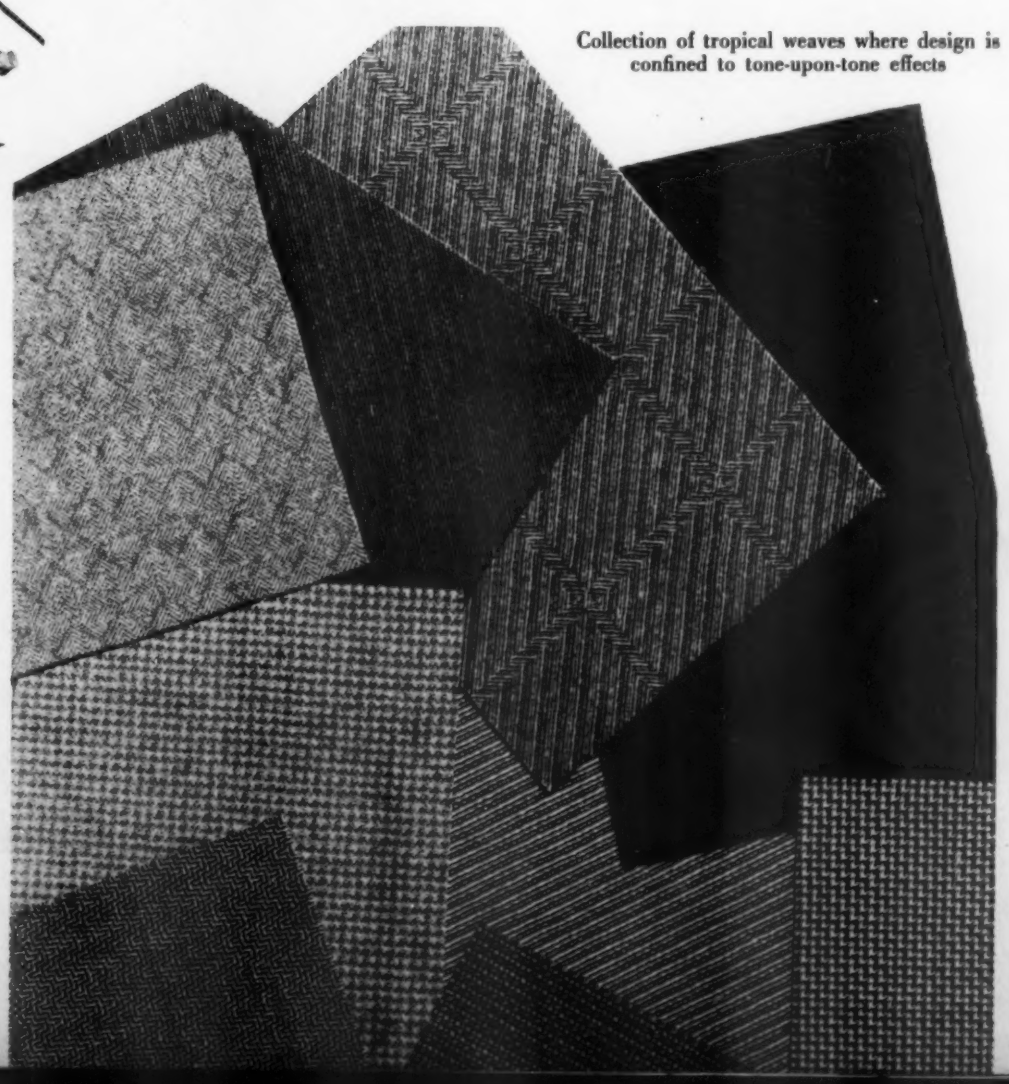
Market place in Witney, famous for eight centuries for its blankets

Captain Murdocke Reports on BRITISH WOOLENS

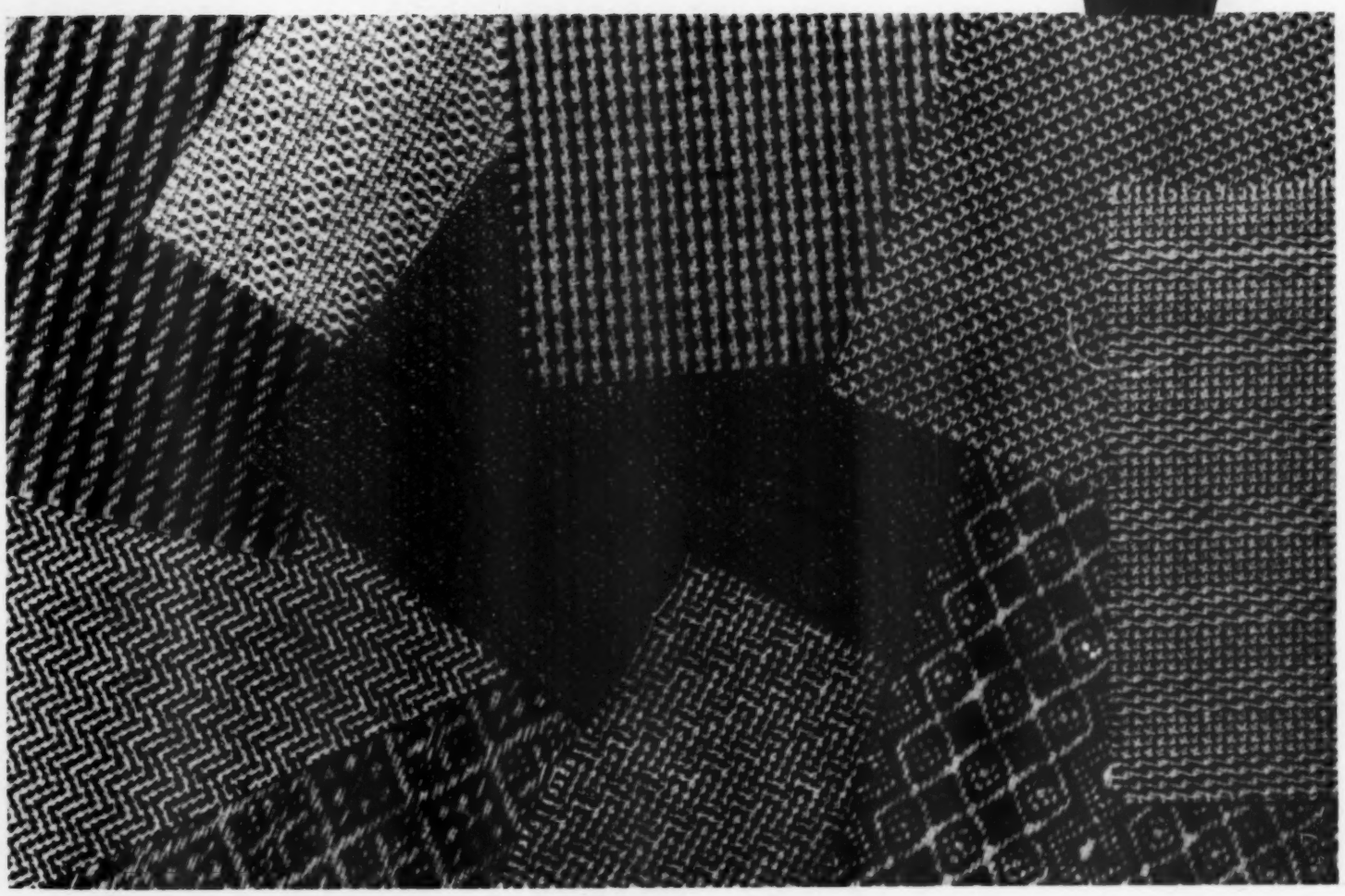
Prominent among English showings are varying shades of blue, grey and brown in woolen cloths . . . with increasing emphasis on the chocolate and walnut shades. More color and more design are noted in all types of fabrics for suits, coats and casual wear.

(please turn the page)

Collection of tropical weaves where design is confined to tone-upon-tone effects



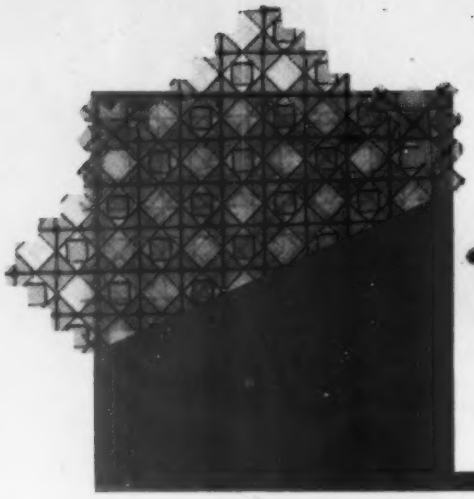
Chicken-coop check casual jacket
Photograph courtesy The Ambassador



Above. Collection of tweed designs that are favored for men's and women's country and sports clothes

Page opposite. Many new variations in classic British suitings. Inserts show medieval weavers' cottages and the old Wool Hall at Lavenham, England

Sorting wool outside of the oldest woolen factory in England



Two superb examples of the trend toward lighterweight fabrics for men's sports shirts. The silk print, at left, as sensible a summer shirting as a man can wear, is distinguished by a permanent set finish which never diminishes in crispness and improves with washing. The blue sample at right is pure silk with a pre-set worsted hand.
— Swatches courtesy of JOYCE

. . . ON THE SUBJECT of LIGHTERWEIGHT FABRICS FOR MEN

SEVERAL GENERATIONS have come and gone since central heating, and then steam heating, became a commonplace in this country. Twenty years ago it was so accepted that the American family must have an automobile that the then president campaigned on the platform of two cars in every garage . . . both with heaters, naturally. The engineers of the buildings in which American men work and live, and of the conveyances in which they travel, laid a specific limitation on the climatic conditions under which men carried on their daily routine . . . and yet, with respect to the apparel that men wore, the splendid achievements of American engineering skill might just as well have remained on the drawing board or in the laboratory.

Despite the fact that a man lived and worked in an age of controlled climate . . . steam-heated homes during the winter, closed automobiles or public busses, heated offices or factories . . . the only choice that was available to him in the selection of his clothing was that of pattern or color, whereas what he actually needed more than anything else was a choice of *weight*. Those who, in the last twenty years, asked why men must continue to wear bulky, heavyweight fabrics under such changed circumstances were decried as visionaries or revolutionists. Men had *always* worn heavy fabrics; the industry had *always* loomed heavy fabrics . . . so why the hue and cry for lighter cloths? But change did come, finally. As more and more of the public learned that lighter fabrics were available, there was a greater demand for them. Finally, in the relatively short period since the Second World War, mills plunged wholeheartedly into the development of lighter weights for winter wear as well as for the summer, for sport shirts and dress shirts as well as for suits, slacks, jackets, etc.

It took the textile industry a long, long time to catch up with the country's engineers; but they have at last done so, and today we are able to look forward to new fabrics which will mean more comfort, more common sense and more good business.

Mr. Allen makes most parts of the loom and assembles them. A fraction off in measurement would result in the loom's being out of alignment.

Leah Allen at a loom made by her husband. The bench is slanted for comfort. A shelf holds extra bobbins for introduction of other colors into web.

AN AMERICAN HAND-LOOM BUILDING-WEAVING TEAM

Mr. Allen of Oregon builds simplified folding hand-looms adapted to the needs of the country's hand weavers . . . Mrs. Allen weaves as a means of demonstrating the looms her husband builds.

Because Mrs. Arthur Allen, Concord Road, Oregon, was so wrapped in her hobby of weaving lovely fabrics on her old two-by-four loom, she inspired her brother, Walter Ganzmiller, to invent a streamlined model. For ten years they worked together, she demonstrating each step of weaving and pointing out weaknesses of her cumbersome machine.

The model Ganzmiller perfected weighs about fifty pounds in the average size, and when the weaver wishes to move it she can quickly and easily fold it to a depth of fourteen inches. Folding the loom does not injure the web, or the cloth during weaving, so it is not necessary to complete each project before moving the loom out of the way. He made it in sizes to take 30-, 36-, 42-, and 50-inch materials. It is a four-harness, six-treadle type, constructed of Oregon maple. Operation is simplified to leave the weaver free to concentrate on her design, and to decrease the weaving time.

Improved Looms

The shuttles, on which are wound the yarn for the weft, are also an improved feature. They are longer than the ordinary, and carry a larger load of yarn. Each holds two ounces, enough to weave 10 inches of web in one winding. There is also a jumbo size shuttle, intended for the making of draperies and similar large pieces, which holds four ounces. The weaver has ready a shuttle wound with each color to be introduced into the weft, and the use of another color simply demands taking another shuttle from the convenient shelf overhead. The weaving bench that makes up part of the loom is slanted, so that it will not check the circulation of its user.

After her brother died, it was left for Mrs. Allen and her husband to market the loom. They bought the right to manufacture, and Mr. Allen started on a home business that dovetails with his wife's hobby, continuing the weaver-loom-building team.

Mrs. Allen modestly sees her weaving as a means to demonstrate and promote the loom her husband builds. In addition to furnishing her home with her handicraft, and making much of her own clothing, she weaves cloth for sale at craft shops and also gives individual instruction to those who wish to share her hobby.

Discussing the use of the loom, Mrs. Allen explains: "There are 330 threads in the warp of this piece I am now making. I like to do it in more than one sitting, threading half, then doing something else before I finish. If I use a wider warp, I divide the threading into four sessions, so that it does not seem too tedious."

Streamlined Weaving

Since she believes that the beauty of woven cloth springs mainly from color and texture, she is no exponent of elaborate patterns, or of damask whose weaving is a slow and painstaking process.

"You can work all day with damask, and have no more than that," she said, measuring off about four inches with her hands. "And you must watch it so closely that no one dares talk to you. On the other hand, by using this tabby, or plain weave, I can finish a table mat or small towel in thirty minutes, concentrating only lightly all the while."

Mrs. Allen has streamlined her weaving lessons, until they are a fitting complement to the Allen loom. "I don't believe in encouraging the pupil to lean on her teacher, but I like to *dish it out* in a way that enables the new weaver to become independent as fast as possible. I think I have cut the steps down to a fine point, although naturally there must be some allowance for variation of natural aptitude, since one will take to manual skills more readily than another. In the first lesson, I teach how to make the warp. At the end of the three-hour period, the loom will be about threaded. In the second session, I show how to roll the warp on the back beam, and how to make the weft. The learner at this stage makes a sampler of several kinds of weaving. From there on, she is ready to design her own patterns. Since all weaving is done by measurements, she can figure these out, once she gets the idea."

Sometimes Mrs. Allen has eight or ten looms in use, to get variety in her work, and to show many weaves at the same time. "But that is not the practical way," she cautioned. "If I were going into it on a strictly commercial basis, instead of using weaving to sell my husband's looms, I should limit myself to one thing, thereby mastering that fabric so thoroughly that I could cut the time expended on it to the minimum. Moreover, one threading of the warp could serve for several articles, as is naturally done with small sets of various kinds. Since I delight in experimenting with colors and yarns, I need not so restrict myself.

"When it comes to color, my flower garden, although it is a distracting interest that rivals my weaving, points to many pleasing combinations that I try on my loom. In some flowers I see delicate chartreuse, in others rich magenta, as in that lily of the Nile. I try them in fabrics, and am not disappointed."

Much of her yarn comes from the Dobeckmun mills in Cleveland. But her linen yarn is an Oregon product, since she believes that Oregon flax is superior even to that of Ireland or Belgium.

For Her Personal Use

Everywhere about the Allens' home are pieces from her looms. A chair is upholstered in grey-green in an unobtrusive pattern. "That is Norse fret," she said. "It does up fast, at the rate of a yard an hour, and is durable." At the windows are wide draperies of white wool. "They are a luxury," she admitted. "The lining alone ran into a good sum, to say nothing of the quantity of yarn. This afghan might be called a bargain . . . the weaving, outside of setting up the warp, took only two hours. Compare that with the hours to knit or crochet one.

"Materials have never been a problem to me, even during the war shortage," she said. "My loom supplied me with all I needed."

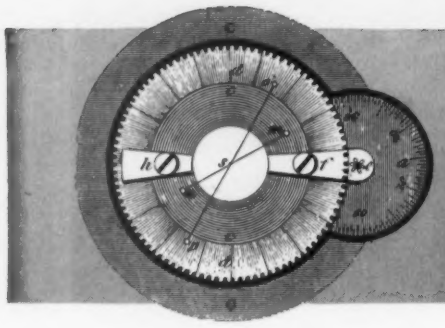
Wools in soft finish make scarfs, trimmed with metal fabric of gold, silver, or copper, depending upon the wool into which it is woven. These metal fibers she also uses in borders for linens. An aluminum fiber covered with colored plastic is used in some to give a unique effect without lessening durability. The only caution for handling the plastic is to avoid too hot an iron. Otherwise, laundering will not hurt it.

Mrs. Allen keeps in touch with the work of other hand weavers through her membership in the Portland Handweavers, an organization composed of amateur weavers and those who, like Mrs. Allen, have achieved instructor status. — MABEL C. OLSON

Compilation of Terms

relating to modern developments in

FIBERS • YARNS • FABRICS



In this period, which has been termed the Age of Science and Invention, the fields of chemistry and physics have contributed many important discoveries of which the textile industry has made ingenious use. Here is presented in handy form a compilation of terms relative to the new fibers and fabrics of recent development; it serves to indicate the scope of textile chemistry's thinking, as well as its constructive contribution to a better way of life.

ACELE: Trademark for the acetate rayon made by E. I. du Pont de Nemours & Co., Inc.

ACETA: Cellulose acetate spun rayon which contains fibroin or casein. The fibers are altered in physical properties to give increased strength, rough surfaces, crimp, etc.

ACETATE RAYON: Fiber, yarn or material made by the acetate process. Differs from other rayons in that it is not a regenerated cellulose, but an ester of cellulose; namely, cellulose-acetate. It has different physical and chemical properties from other rayons especially in its reaction to dyes, and a whole new set of dyes had to be developed for it. The principal developmental work was done by two brothers, Camille and Henri Dreyfus of Basle, Switzerland.

AERATED YARN: Special rayon yarn with a hollow center, containing air or inert gas.

AGFA: Viscose or acetate fibers altered in physical properties to increase strength, to cause the surfaces to become rough, and to produce crimp.

ALGIL: A polystyrene fiber made into batting form from a fine diameter filament which does not absorb moisture. Algil is acid- and alkali-vapor resistant, is thermoplastic, and will burn under flame. Used as a substitute for kapok and as a filtering medium.

ALGIN: A product obtained from certain marine algae. It may be extracted from kelp or sea-weed and has been spun into filaments on a commercial basis. Also used in printing pastes and as a dressing material.

ALGINATE FIBERS: They are produced by extruding alginate solution through spinnerets into solution of beryllium sulphate or other chemicals. Various alginates differ in their properties; several are supposed to have good resistance to mildew. Beryllium alginate is said to be resistant to alkalies. The chief uses of the fibers are for experimenting in garnishing camouflage and netting.

ARDIL: A protein fiber produced from peanuts. Made in England.

ARTIFICIAL STRAW: A viscose rayon specialty product made by forcing the spinning solution through a rectangular shaped orifice in the spinneret into a suitable coagulating bath. It consists of a continuous, ribbon-like filament folded during spinning and resembling straw.

ARTILANA: German viscose fibers chemically modified to give more affinity for acid dyes.

ASBESTON: A light-weight fiber-resistant asbestos fabric used to cover ironing boards. Made of a lightweight asbestos yarn, the material gives good resistance to wear. Asbeston may be washed by hand and bleached if necessary to remove stains.

AVISCO 15: A dull, crimped, viscose rayon staple made especially for the carpet trade. This product of the American Viscose Corporation is made of 15 denier, hence the name.

AZLON: A proposed generic name for textile fibers made from protein sources such as casein (milk), zein (corn), soybean, etc.

* * *

BARK FIBERS: Shredded bark of the redwood and other large trees of the west coast can be used in blends for mackinac, ski cloth, etc. The Pacific Lumber Co., San Francisco, Cal., has done considerable work in the field and their product is known as Palco. Heavy fabrics with twenty to thirty percent bark fiber in content will meet the necessary testing requirements for the trade.

BEMBERG RAYON: The yarns and fabrics composed of products of the American Bemberg Corporation noted for its cuprammonium *stretch system of spinning.*

BEMBERG RAYON MANUFACTURE: This is spoken of as the Pauly-Elberfeld-Glantzoff method. Cellulose is treated with copper sulphate and ammonia to digest it. This method was discovered in 1857 by Schweitzer for whom this reagent is named.

In 1882, the Austrian inventor, Carl von Welsbach (1858-1929) used this process to make incandescent, electric lamp filaments.

The first modification was made by Despaissais in 1890.

Pauly, at Mgladbach, Germany, further modified the method of Despaissais. The latter method was the first cuprammonium process used as an alternative of Schweitzer's and Weston's efforts. Financial interests in the Mulhouse region of Germany organized the Glantzoff Fabriken A.G. of Elberfeld in 1897. This method was later abandoned for the viscose method of making synthetic fibers. Later on cuprammonium came into its own.

Dr. Elsaesser invented the stretch system of spinning cuprammonium which was based on patents held by Thiele. The results were so successful that they were adopted by J. P. Bemberg A.G. in Germany and in other countries which had affiliations with the concern.

By 1924 the system was perfected to the point where it had genuine commercial value. This method of making man-made fibers is called the Stretch System because there is an actual stretching of the filaments in the spinning operation.

BEUTANOL: Plastic-coated fabrics on the order of lawns and *80-squares,* which have been given five coats of vinyl plastic to enhance pliability, hand and finish. Fabrics thus treated may be washed and ironed, but this is usually not necessary since the fabrics are waterproof, dustproof and stainproof, as well as fire-resistant. Vat dyes are used instead of pigments in the coloring which precedes the coating treatment. Fabrics treated with the finish find much use in the household.

BEXAN: A monofilament thread made by BX Plastics, Ltd., London, England. Made from vinylidene chloride copolymer supplied by Dow Chemical Co., Midland, Michigan. BX Plastics is the sole importer of the plastic, Saran, for this purpose. Bexan monofilaments are made into woven fabric in England.

BLENDS OR COMBINATIONS OF NATURAL AND MAN-MADE FIBERS: These have increasing importance in the fabrics of today. Through the use of such combinations, not only is there effective replacement of some of the scarcer natural fibers, but fabrics made from combinations seem to have novel effects and qualities not heretofore possible. The blending of staple fiber with wool, for example, has made possible the production not only of fabrics ideally suited for men's and women's outerwear but also such items for the home as blankets, rugs, decorative fabrics, upholstery.

The fibers combined may be any of the natural ones or any of the man-made types in spun or filament forms.

The actual process of blending may be carried according to the effects which are desired. It is possible to ply the yarns by combining two or more ends which have been previously twisted together. Sometimes the blending is done in connection with the carding process, or a core yarn of one type may be used around another yarn which may be spun. There are many variations which can be obtained through interchanging the content and the kind of warp or filling yarns.

Individual manufacturers may employ one or all of these methods of blending fibers.

While it is generally possible to blend any or all fibers more or less, utmost attention should be given to the experimental work, fab-

ric construction, fabric control, and marketing possibilities.

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CARGAN: A Belgian casein fiber.

CAROSEL: A dish toweling made by the Textile Division of United States Rubber Company. Ideal for wiping purposes, it is made of 80% cotton and 20% asbestos which contributes to absorbency and polishing properties.

CASEIN FIBER: Synthetic protein fiber made from casein which is precipitated from skim milk. Lanital was the first casein fiber to appear in the trade, an Italian product. When cut to staple length the fiber has many of the properties of wool. Fibers made from a base of condensed milk, evaporated milk, or skimmed milk are: (1) Germany, Triolan; (2) Holland, Lactofil, Casolana; (3) Italy, Artilax, Cargan, Lanital.

CASLEN: Produced in monofilament and coarse staple forms, this fiber was originally developed as paint brush bristle. Spun in filaments of 145 to 1330 denier, the fiber is produced in straight or curled form.

The fiber has possibilities as a substitute for horsehair in fabrics, and the curled form is used to replace hair in mattresses. Other uses for the continuous filament yarn are similar to those in which plastic monofilaments are today being used. While the strength, as yet, does not cope with that of Saran, the fiber is resilient and thermoplastic.

Caslen, a trademarked name of the Rubberset Co., Newark, New Jersey, is being used as a blend in rayon; it is also blended with wool for filter felt. This Azlon-produced casein fiber dyes easily, softens and increases in elasticity in hot water, and will recover fully upon drying. It is attacked by even mild caustics, but will withstand mild acids.

Produced in Caslen plant, this textile product burns very slowly, has water absorbency similar to wool, dyes like wool, and is attacked by mildew and moths.

CASOLANA: A Dutch casein fiber.

CELAIRESE: A successful replacement for other materials which for years have been used as filler for bathrobes, bedspreads, card-table covers, comforters, jackets, pillows. This product of the Celanese Corporation is a natural insulator; it launders or dry-cleans very well, and since it is free from foreign matter it is spotlessly clean and unaffected by atmospheric conditions or perspiration. Celairese is available in two colors, permanent pure white and a natural black which is an inherent part of the fiber itself.

CELANESE: The registered trademark of Celanese Corporation of America, used to designate its textile and other products. Celanese Corporation is the largest producer of yarns made by the cellulose acetate method.

One of the important characteristics of acetate yarn is low moisture absorption, which means speedy drying and resistance to wrinkling, mussing, shrinking and stretching. Since acetate yarn is thermoplastic it can be shaped and set by controlled heat and pressure, thus permitting moiré markings and pleats in finished garments.

Acetate fibers, unlike the natural fibers, are born white and remain so. They are naturally resistant to mildew, mold and silverfish and are non-irritating to the skin.

Certain characteristics set Celanese fabrics apart from others. Some of these features include retention of body in damp climates, easy application of dyestuffs, drapability, dimensional stability and ease in care of the fabrics.

CELASTIC: A patented liquid which, when applied to fabric, first softens it to facilitate molding to shape, and when dry stiffens the fabric to preserve that shape. It is used in preparing fabric for use in box toes of shoes.

CELCOS: A man-made fiber which contains acetate rayon with a large percentage of viscose rayon. The first yarn in this field which combines set proportions of acetate and viscose rayon in a single fiber.

CELLULON: Made of celluloid on the principle of rayon staple fiber, it is spun on the cotton system.

CELLULOSE: A white, shapeless or amorphous substance which forms the cell walls of plant life. It is made up of woody, fatty or gummy substance and amounts to about 96 percent content of the cotton fiber whose chemical formula is $C_6H_{10}O_5$ taken x or n times. Cotton minus its water content give cellulose, which finds use in making nitro-cellulose from which gun-cotton is made, pyroxylin, cellophane, collodion and other commercial products. One of the greatest products made from cellulose base is the man-made fiber group of textile yarns — viscose, cuprammonium, nitro-cellulose and acetate rayon. Cotton linters or hemlock, pine or spruce chips, all vegetable matter are used as the base for these yarns.

CELLULOSE ACETATE: There are three forms of acetate . . . mono-acetate, di-acetate, and tri-acetate. The recognition of this acetic acid ester of cellulose depends on the number of hydroxyl groups of cellulose replaced by the acetyl group. See Acetate Rayon.

CELTA: A hollow filament produced by the cuprammonium process, which makes a light, soft, fine but strong yarn similar to the multa-filament Bemberg yarn.

CHALKELLE: Full, dull luster viscose rayon yarn made by the American Viscose Corp.

CISALFA: An Italian product of viscose rayon fibers with 3 to 5 percent casein (milk) incorporated to give it wool dyeing properties.

CONTINUOUS FILAMENT: Synthetic and regenerated fibers can be manufactured in a continuous filament, as distinguished from all natural fibers except raw silk, which have a short staple or length.

CONTRO: The rounded latex and cut rubber threads used as a cord and also wrapped with cotton, rayon, silk, etc., in manufacture of elasticized fabrics. Product of Firestone Tire and Rubber Co.

CORDURA: A rayon process yarn with great strength, used for tire cords. As the tire heats up and drives out moisture, Cordura becomes stronger. Experiments show that organdy curtains woven with Cordura high-tenacity rayon possess qualities which are reported to surpass those of Swiss organdy.

CUPRALAN: A German viscose product chemically modified to increase affinity for acid dyes.

CUPRAMMONIUM: The second method, in historical order, of making rayon. The product is a regenerated pure cellulose. Generally referred to as Bemberg Rayon.

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DACRON: Pronounced *Day-cron*, it is the trademark name for the synthetic polyester textile fiber produced by E. I. du Pont de Nemours & Co., Inc. Formerly known as Fiber V, it was first developed in England under the trademark of Terylene, and the American rights were obtained in 1946.

Dacron is a condensation polymer obtained from ethylene glycol and terephthalic acid. It is not related to or connected chemically with nylon or the acrylic fiber Orlon.

Properties include high tensile strength and high resistance to stretching, both wet and dry, good resistance to degradation by chemical bleaches and to abrasion. Fabrics made with either filament or staple fiber indicate excellent resilience and resistance to wrinkling, easy laundering and quick drying, and they can be heat-set. The fiber has good electrical insulation properties and is not weakened by fungus, mold or mildew.

DISCONTINUOUS FILAMENT YARN: Tecafil, an acetate yarn made by the Perlock Process, typifies discontinuous-filament yarn. It is made from continuous-filament sliver by breaking the fibers and drafting and spinning them. In appearance, Tecafil resembles continuous-filament yarn; in pliability, spun rayon yarn. The product is used in making dressgoods.

DULESCO RAYON: The semi-dull rayon yarn produced by the American Viscose Company.

DULL YARN: Rayon yarn which has a very subdued luster, usually produced by incorporating finely divided particles of titanium dioxide in the spinning solution.

DYNEL: A staple fiber spun from a copolymer of acrylonitrile and vinyl chloride. The name distinguishes it from the older Vinyon yarns developed by Carbide and Carbon Chemicals Corporation. Features of this fiber include strength, warmth, and quick drying properties, good dimensional stability and resistance to acids and alkalies. It will not support combustion, is completely moth- and mildew-proof, can be dyed with either acid- or acetate-type colors and is easily processed on the cotton, woolen, worsted or silk systems.

Dynel comes in filament sizes of 2, 3, 6, 12 and 24 denier and in staple lengths of 1⅜, 1½, 2, 2½, 3½ and 4 inches.

* * *

ESTRON: A generic term for man-made fibers, monofilaments and continuous monofilament yarn of one or more esters of cellulose with or without lesser amounts of non-fiber forming materials. Estron, as commercially manufactured, is produced by one process, namely, Cellulose Acetate Estron.

ETHYL CELLULOSE: Produced experimentally by the Dow Chemical Company, it is known

by the trade name of Ethoraon. The properties include good flexibility, toughness, and low moisture absorbency.

EXTON: The trademark of synthetic bristles used by the Dr. West Co. The bristles are derived from nylon and, by a treatment of Exton, they are made wet-proof, have springiness and last much longer than ordinary bristles.

EXTRUDED LATEX: This basis for lastex and latex is forced through a nozzle into a coagulating bath, from which the formed yarn is drawn off by a pair of rollers. This solid, round, elastic core will give about 14,000 yards to the pound in Laton and about 11,000 yards in Lastex. Its uses are about the same as those of lastex.

FIBER D: The name given to a fiber which has a durable crimp that may be recovered even if temporarily altered during processing. Crimp gives bulk to the yarn and a wool-like appearance and hand to fabrics. When Fiber D is treated with Zelan finish, it acquires a soft feel similar to that of carpet wool. It is used as pile yarn in rugs and carpets. Other uses include industrial fabrics, shoe fabrics, bathing suits, coatings, linings, knitted fabrics.

FIBERGLAS: Textile fibers and yarns produced from glass, which, when drawn fine enough, can be woven into strong, flexible fabrics. The raw materials that are used to make ordinary glass are refined and shaped into glass marbles which are remelted and formed into more than a hundred glass filaments, simultaneously attenuated into a single yarn of minute diameter. Glass yarns have been produced as fine as 100s cotton count.

Short, staple glass fibers, ranging from 8 to 15 inches in length, are produced by striking the streams of molten glass with jets of high-pressure air or steam. This process separates the filament where required, and seals the ends of the short staple. Short-staple glass yarns have a fuzzy surface, but the continuous filament produces smooth yarns.

Fiberglas is resistant to most chemicals and is insoluble in organic solvents. It is affected only by hydrochloric and phosphoric acids, and by weak, hot solutions or strong, cold solutions of alkalies.

Fiberglas is used for fireproof clothing and draperies, for electrical insulation, and for soundproofing. It is non-inflammable, non-absorbent, mothproof, mildewproof, and resistant to sunlight; it does not deteriorate with age. These qualities make fiberglas a very hygienic fabric. Home furnishings products include bedspreads, curtains, tablecloths, and shower curtains.

FIBRAMINE: A Belgian viscose product which contains three to five percent casein to give the wool dyeing properties.

FIBRO: American Viscose Corporation trade name for rayon staple fiber. It is made by a modified process similar to that employed in spinning high strength continuous filament yarns in England. It is sold in this country under the name of Strong Fibro. The yarn comes in denier sizes of 1¼ with a staple length of 1⅞ inches, and 1½ with 1 7/16 inch staple; the latter is used for spun yarns.

Fibro has from 8 to 17 percent higher dry strength and 17 to 21 percent higher wet strength, depending on the count of the spun yarn, when compared with corresponding yarns made from ordinary rayon staple.

FIBROCETA: Comes in Matt and Bright types, in 4.5 denier size, and 6-inch staple length. Fibroceta has a lower density than Viscose Fibro, thereby affording a greater bulk per unit weight and fuller hand, and when used in blends with Viscose Fibro gives cloth a woolly appearance and feel. Special dyestuffs have to be used in dyeing the fiber.

FIBROLANE: In 3.5 denier and 6-inch staple length, this is a fundamentally distinct fiber; and since it has a protein base it is allied chemically to wool. Soft in handle with an affinity to wool dyestuffs, it is, however, weaker than staple fiber made from a cellulose base. Possessing good plastic qualities, the fiber is ideal for blending with wool for hat felts.

FILAMATIC: Term used by American Viscose Corporation to describe their high-speed continuous automatic process for spinning rayon filament textile yarns.

FILAMENT: An individual strand that is indefinite in length. Examples are silk, which may run from 300 to 1400, 1600 and even 1800 yards in length; man-made filaments are indefinite in length and may attain a total length of several miles. Filaments are finer in diameter than fibers. A fiber or a filament is the smallest unit in any type of cloth.

FILAMENT COUNT: The number of individual fibers or filaments actually counted in silk or man-made fibers or filaments. The number of filaments has direct influence on the softness, strength, pliability and finish of the fabric.

FILENZA: American Viscose Corporation rayon yarn that is semi-dull in lustre.

FLOCKING FABRIC BY SPRAY METHOD: Viscose rayon staple may be flocked onto fabric, leather, cardboard, etc., to give plush, suede and velvet effects. Known as Flisca Fiber Technique, the method has been developed by Societé de la Viscose of Emmenbruecke, Switzerland.

The short staple fiber may be applied to an adhesive backing either by spray or by an electrostatic plan. The spray method uses compressed air much on the order of spraying paint. In the electrostatic method the fibers are drawn by an electromagnetic set-up onto a resin-treated surface. Suedes are developed from an 0.5 millimeter length of fiber, while velvet is simulated from a length of 1 millimeter and plush from a 1.5 millimeter length.

FORTICEL: A satin-surfaced, fast-moulding thermoplastic produced by the Celanese Corporation of America. Features of the plastic include great toughness with lightness, low moisture expansion, and unlimited colorability. Moulded surfaces require little or no finishing.

FORTISAN: Registered trade name for a particularly strong yarn developed by Celanese Corporation. It is made by subjecting suitable cellulose acetate yarn to mechanical treatment to obtain a parallel molecular structure, then to saponification for a regenerated cellulose yarn, which is chemically similar to cotton. Uses include parachutes, core threads for tinsel conductors, sewing thread, shroud lines, high-strength coated fabrics and webbing.

GANTRON: This fabric receives its energy from the ultra-violet rays of daylight and is very bright under normal daylight conditions. It is purported to be twice as bright as ordinary textiles under normal daylight conditions, and up to ten times more discernible at dusk or under overcast skies. Gantron will dry instantly since it is non-absorbent.

GLANTZSTOFF: The name usually given to rayon yarn of the Vereinigte Glanzstoff Fabriken, the original basis for Bemberg yarn.

HELANCA: A type of rayon used by the Swiss as a substitute for wool during the late war. The yarn is treated mechanically and chemically to give a permanent wool-like effect. It is high in shrinkage-resistance and surpasses wool in this respect. Moths and alkalies will not attack the fiber which is used in the manufacture of woven and knit goods.

HIGH TENACITY YARNS: These yarns have been developed for purposes where fabrics of extra strength are required: for example, tackle twill and similar specially durable fabrics required for military purposes. High-tenacity yarns produced by the viscose process are Cordura and Tenasco.

HYCAR LATEX: May be used as a coating or impregnant for expensive or inexpensive materials. The product has high resistance to oils, abrasion, flexing and chemicals. Hycar-treated fabrics may be coated with any one of a number of other materials to impart additional properties. Vulcanization is not necessary in any processing.

KODA: Continuous filament estron (cellulose acetate filament) produced by Tennessee Eastman Corporation.

KODA CLOTH: Trade name for fabrics composed of Koda or Koda and one or more other fibers or yarns.

KODAPAK: Eastman Kodak Company's trademarked name for their cellulose acetate product which comes in sheet, strip or other form.

KOHORN STAPLE FIBER: A rayon fiber which combines some of the properties and advantages of wool with low cost and the versatility of viscose rayon. This rough-surfaced fiber which approximates wool in this respect has a hollow space running throughout the fiber. The crimp is equal to that of wool and it is claimed to be stronger than wool in the dry state, and as strong as wool in the damp or wet condition. Fabrics may be 100 percent staple or blended with wool according to demands of the trade.

KURON: A one-way stretch elastic material which has no rubber threads, although rubber is used as the basic elastic element. Used in

elastic for garters, pajamas, suspenders and underwear.

LACTOFIL: A Dutch fiber in which milk casein has been mixed with latex and glue.

LACTRON: A U. S. Rubber Co. trade name for an extruded rubber thread compounded from latex in sizes suitable for textile applications.

LAMINATED FABRIC: Layers of cloth joined together with resin, rubber glues, etc., to form one. For balloon fabrics and other uses, two or three layers are treated with rubber and vulcanized.

LANATIN: An American method of modifying the physical properties of bast fibers, such as cotton, ramie, jute, hemp, etc.; rayon, acetate rayon and some other man-made filaments. Fibers thus treated are referred to, for example, as Lanatinized cotton, etc.

LANITAL: Trade name for the original protein fiber made from casein, produced in Italy.

LASTEX: Lastex yarns combine rubber with cotton, wool, silk, or rayon yarns to produce a permanently elastic yarn that is used for a variety of purposes. Latex composes the rubber core, and any of the textile yarns may be wound around it, forming a filament whose surface is fully vulcanized.

Lastex yarn may be used as warp or filling; the woven fabric stretches in the direction of the lastex yarn. If used for both warp and filling, it is stretchable in both directions.

Lastex yarns are used in abdominal belts, corsets, girdles, hosiery, riding apparel, shoes, shoulder straps, ski wear, sweaters, swim suits, underwear, waists. These yarns can be made fine enough for such sheer fabrics as batiste and lace. Lastex garments are porous and therefore hygienic. Because of their comfort, they are especially suited for sportswear. They do not lose elasticity readily, and endure dry cleaning, washing and the heat of a moderate iron without shrinking or stretching out of shape. Product of U. S. Rubber Co.

LATEX: The liquid exuded by tropical rubber trees when the bark is cut. This may be coagulated with lactic acid and compressed into sheets, or smoked to solidify into rubber.

LATON: It is used as a covering and not as a core. Laton has its covering spun on the core from a strand of roving. Made by the United States Rubber Company, it finds much use in fine gauge knitting machines and in making sheer woven goods. Uses are for slips, panties, jackets, ski suits and vestback lining.

LINEN-TEXTURED RAYON: A large and important category of rayon fabrics having the distinctive textures of linens. These range from sheer handkerchief-linen texture to heavier, rougher *butcher-linen* texture. Usually plain weave. Used in lighter weight for handkerchiefs, women's and children's dresses, tablecloths, towels, sheets, pillowcases; heavier weights for summer coats, suits, sportswear.

LUREX: A metallic yarn of plastic coated aluminum made for use in lamé fabrics. The yarn is composed of an aluminum base fiber sandwiched between two plies of specially formulated plastic film. Special processing and adhesives make the yarn impervious to tarnish, and also much lighter than ordinary metallic yarns. Lurex is used in evening wear fabrics, curtain drops, millinery and fabrics for pageantry.

LUVON: Trade name for a two-way stretch elastic fabric containing no rubber threads, although rubber is used as the elastic element. Its wide variety of uses includes suspenders, garters, bathing suits and upholstery fabrics.

MATT FIBRO: Delustered type of Fibro which comes in deniers of 3 and 4.5 and in staple lengths for the worsted trade of four inches and six inches. Two-inch staple length is used in the woolen trade. Much used in ladies' dressgoods, Matt Fibro seems to have a firmer hand than cotton-spun fabrics because of the increased staple length and coarser denier.

MILIUM: Aluminum and other metallic substances in a resin base furnish this finish which may be applied to a great number of textile fabrics made of cotton, nylon, rayon or wool. The finish provides insulation against cold and prevents the loss of body heat.

A rayon satin lining treated with Milium will be about 12 percent warmer than untreated lining with an 11-ounce conventional wool zip-in lining. A nylon blanket cover, for example, will provide greater warmth than a 3½-pound woolen blanket if treated with the finish. A product of Deering, Milliken Co.

MODIFIED CELLULOSE FIBER: A fiber made by incorporating a synthetic resin, casein, etc., in a viscose spinning solution, produced as staple fibers with a soft handle and dyeing properties like wool. It is also referred to as basified viscose.

MODIFIED STAPLE FIBER: Rayon staple or spun yarns treated so as to give wool-like properties to the product. The surface effect of fabrics made of this staple stock is usually somewhat rough. Teca is a prominent fiber in this particular group.

MODIFIED VISCOSE STAPLE: Viscose process staple which contains a small percentage of casein which gives it wool dyeing characteristics. Rayolanda is the British trade name for modified viscose staple fiber; Cisalfa is the Italian name for the same product.

MONOFIL: A single large filament of rayon or other man-made fiber.

MONOPLEX 11: Plasticizer for polyvinyl and copolymers for use in coated fabric, luggage, rainwear, shower curtains and upholstery. The product is a dialkyl ester of a synthetic long-chain dibasic acid which shows high plasticizing efficiency in polyvinyl-chloride stocks, with low temperature and ultra-violet resistant properties at much lower volatility than is usually found combined with such solvating action. Treated products hang and drape well.

MULTI-FILAMENT: Rayon yarn with many fine continuous filaments or strands. Used in very soft-hand materials.

NARCO: Trademark under which yarn of the North American Rayon Corp. and fabrics made from them are promoted and marketed.

NARDURA: A high tenacity viscose rayon produced by the North American Rayon Co.

NYLAINE: Registered trademark of the Cyril Johnson Woolen Co., in connection with their virgin wool-nylon fabric used for lightweight garments. This nine-to-ten-ounce fabric is stock-dyed, has a smooth, clear finish and is woven in plain doeskin effects and in contrasting herringbone patterns. The fabric is strong, light in weight and has a particularly good hand such as found in the better quality woolens. Nylaine has high tensile strength, excellent abrasion-resistance, and its shape retention properties in garments are outstanding.

NYLON: The generic name chosen by the E. I. du Pont de Nemours Company for a group of protein-like chemical products classed as synthetic linear polymers. The term nylon includes a vast group of chemically related products the physical properties of which differ considerably.

Of especial interest to the textile industry is nylon in filament yarn form; this is made from a polymer in flake form which is melted and forced through a spinneret. It is produced in deniers ranging from 10 to 210, with an individual filament size of about 3-denier. Among the distinctive features of nylon are high tensile strength, elasticity and toughness, flexibility, high resistance to abrasion, and low water absorbency.

NYLON BRISTLE FILAMENT: One form in which nylon is manufactured is called the monofilament form, that is, one single solid strand clear through. This covers all nylon filaments .050″ in diameter or over. One of the main uses for these monofilaments, after cutting into required lengths, is for bristles in toothbrushes, hairbrushes and industrial brushes of many kinds.

ORLON: A textile staple fiber or continuous filament produced by the E. I. du Pont de Nemours Company.

The raw materials which may be used for Orlon include coal, air, limestone, natural gases, petroleum, water. The product is a fiber based on a polymer of acrylonitrile and therefore is classed as an acrylic fiber.

Features of Orlon include resistance to sunlight and atmospheric gases which makes it ideal for awnings, curtains and other outdoor uses; stability, little or no shrinkage in fabrics, a soft, warm hand and good drapability. The same washing techniques and ironing temperatures as used for acetate rayon and nylon apply to Orlon.

The filaments have a tensile strength which corresponds to from 60,000 to 75,000 pounds per square inch when dry, and the strength is almost as good when wet. The fibers have good elasticity and low moisture absorption. Orlon is resistant to chemicals, chiefly acids, and it has the ability to withstand high tem-

peratures, thereby providing suitability for various industrial uses.

Orlon, in staple form, can be used alone or blended with the major textile fibers, either natural or man-made, for suitings and blankets.

PEANUT FIBER: A protein-base staple fiber produced from peanut meal.

PERMALON: This derivative of vinylidene chloride is used to make coarse yarns or cords. Has a tensile strength of about 35,000 pounds per square inch and an elongation of about 15 percent at the breaking point. It is non-flammable, not affected by water and is insoluble in benzene, carbon tetrachloride, gasoline, hydrocholoric acid, sulphuric acid and caustic soda. Used in fishing leaders, fly screens, tennis racquets and trolling lines.

PLASTIC: Any material, natural or synthetic, which may be fabricated into a variety of shapes or forms, usually by the application of heat and pressure. A plastic is one of a large group of organic compounds synthesized from cellulose, hydro-carbons, proteins or resins, capable of being cast, extruded or molded into various shapes. From the Greek, plastikos, which means *fit for molding.*

PLASTYLON: Made of *glass wool* and miscellaneous waste fibers in long staple form. In wool and cotton combinations it is processed into upholstery materials. Elasticity and heat- and moisture-resistance are good, and the tensile strength compares well with nylon.

PLEXON: Plastic-coated yarns which have unusual tensile strength, flexibility, and adaptability. They can be made in a variety of deniers, types and colors. Their resistance to water, mild acids, and perspiration is a great advantage in their use.

Many types of fabrics may be made from them: woven, knitted, braided, crocheted, and knotted, and the yarns have been used successfully in the manufacture of handbags, belts, shoes, draperies, upholsteries.

PLICOSE: A heavy waterproof rayon fabric which remains soft and supple after treatment with a special chemical which renders it impervious to dust and dampness. Plicose can be sponged with a damp cloth over the surface for cleaning. The dyes used on the material are sun-fast. The fabric is coated on one side with a special pyroxylin plastic finish.

POLYETHYLENE: A synthetic resin adapted to molding and casting purposes and for the extrusion of yarn and staple textile fibers. Its specific gravity of 0.92 indicates a very high covering power.

The product is produced in the form of granules ready for the extrusion process. Coloring matter is contained in the material and, if desired, totanium dioxide may be used as a dulling agent.

POLYVINYL-CHLORIDE FIBERS, FRENCH: These pure, unplasticized fibers will not burn or melt, dissolve in ordinary textile acid or alkaline solutions, or conduct heat or moisture.

Rhovyl is the continuous filament. It has high tenacity, wet or dry, to about three-quarters that of nylon. It will *shrink-up* wet at 167° F., and dry at 176° F. Rhovyl dyes readily with acetate dyes in warm solution. It can be treated to become static-resistant.

Fibrovyl is the staple form of Rhovyl and has some use as filling with Rhoyvl warps. Furnishes a soft hand, lessened shine and slippage and provides greater resistance to relaxation defects in finished goods.

Thermovyl is the staple fiber with lower molecular concentration than Fibrovyl. It has less rupture-resistance when compared with Fibrovyl and will stretch considerably prior to breaking. Does not *shrink-up* in boiling water or under 212° F. Dyes in hot solutions of acetate dyestuff.

Isovyl is of rather weak molecular construction and has a larger diameter than the aforementioned types, about 18 denier. It is crush- and crease-resistant, will stretch prior to breaking and can be dyed in hot solutions with acetate dyestuffs.

The basic fiber is extruded in filament form into a volatile solvent and then into hot air, rather than into a coagulant. This admits of higher spinning speeds when compared with so-called wet-spinning. Can be produced as fine as three denier.

POSITEX: A form of natural-rubber latex with reversed charge. The product is deposited on yarns as discreet particles instead of as a continuous film; it is said to be undetectable by eye or hand when applied in ratios of ten to fifteen percent.

Positex can be used to prepare felts from non-felting fibers such as the bast fibers; such felts are not waterproofed and will maintain their air permeability.

Two grades of the product are made, vulcanized and unvulcanized, each of which is prepared and compounded for certain applications. Both types are ready for immediate use after addition of water and adjustment of

pH. The rubber material has a pH ranging from 3 to 11.

The new rubber material can be compounded with many substances such as moth-proofing agents, pigments, scents, water repellents. Positex will not impart elasticity.

PROLON: Term applied to textile fibers made from protein bases. Examples are casein (milk) and zein (corn). Vicara is another example of a protein fiber.

PROTEIN FIBER: Made from soy beans and corn meal, the latter being known as Zein. The vegetable matter is crushed and oil is extracted. Saline solution extracts the protein. A viscous solution is made and chemical treatment produces the extruded filaments through a spinneret into a coagulating bath. Winding and reeling follow to give the commercial product. The purpose of these fibers is to use them in varying percentages with major textile fibers to make apparel of several types.

PX CLOTH: A special type of pyroxylin-impregnated, washable bookbinding cloth.

PYROXYLIN: A cellulose product which is used to coat cotton or rayon fabrics to make a fabric water-proof, stain-resistant, etc.

RAMATON: Made from ramie in the natural form, the yarn is said to be stronger than cotton, silk or any of the synthetics now in use.

RAMIE: Known also as Rhea and China Grass, it belongs to the stingless nettle group of which there are two varieties. The first grows in tropical climates and is called Rhea, while the second type is raised in temperate climates and is known as China Grass. The fiber is strong, white, silken in luster, and although it is a fine fiber in diameter it possesses high tensile strength and elasticity. Although ramie is a very old fiber, technically speaking, it is now being used in dress goods, sports clothes, tablecloths, fish lines, lining, upholstery.

RAYFLEX: High tenacity, viscose rayon yarn used in tire cord. Product of the American Viscose Company.

RAYON: The American Society for Testing Materials defines rayon as "a generic term for filaments made from various solutions of modified cellulose by a pressing or drawing the cellulose solution through an orifice and solidifying it in the form of a filament." The term also implies fabrics made of rayon fibers.

The cellulose base for the manufacture of rayon is obtained from wood pulp or cotton linters which are the short brown fibers left on the cotton seed after the first-time ginning on the plantation or at the community gin. Wood pulp for rayon comes from spruce, pine or hemlock chips.

Rayon, at present, includes yarn made from the cuprammonium, nitro-cellulose, viscose, or acetate methods. The making of rayon involves much scientific and chemical knowledge, research, and experimentation.

Rayon fibers, like cotton, leave an ash when burned with the exception of acetate rayon which leaves a hard bead difficult to crush between the fingers. The method of making acetate rayon differs from the other three methods.

About sixty-six percent of all synthetic fibers are produced by the viscose method; about thirty-two percent on the acetate method, with the cuprammonium method supplying the remainder since the nitro-cellulose method is all but extinct.

Acetate rayon filaments are formed by a compound of cellulose and acetic acid which has coagulated. Cuprammonium filaments are made of regenerated cellulose coagulated from a solution of cellulose in ammoniacal copper oxide. Viscose filaments are made of regenerated cellulose coagulated from a solution of cellulose xanthate.

Under these three general terms there are many types of rayon and many trade names for them: Acele, Bemberg, Celanese, du Pont Rayon, Enka, Monofil, Narco, Seraceta, Visca, and others.

RAYON STAPLE FIBER: Originally referred to the waste coming from the manufacture of filament rayon. It is now specially made on a large scale comparable with that part of the rayon business given over to filament yarn. Filament is cut to staple lengths on its emergence from the spinneret in the processing. It is ideal for spinning on the cotton, woolen, worsted and flax methods. Staple fiber comes in bright and dull effect and in varying deniers.

ROLLED LATEX: Known also as Controlastic. it is first formed as a flat strip and then rolled

on itself much in the same manner as one would roll paper into a tube form. Stretching straightens the molecules and adds strength. A fine core thread results which is covered with Nylon and used for foundations, bathing suits, cushions, and hosiery.

RUBBER: A substance obtained from the milky juice, or rubber latex, of tropical plants, and usually characterized by its elasticity, though its properties vary widely depending upon its source and preparation. The principal source of crude rubber is plantation rubber from plants, *Heves brasiliensis,* cultivated on plantations in the Malay Peninsula, Dutch East Indies and elsewhere. Among other properties, it is resistant to abrasive wear, flexible, extensible and waterproof. It is commonly combined with yarns and fabrics to make elastic products, raincoats, balloons, tires, etc.

RUBBER-COATED CLOTH: A fabric which has one or both sides treated with a thin coating of rubber which has been spread onto the material in soluble form to make it waterproof.

RUBBER THREAD COUNTS: The number or size of the thread is based on the relationship of the thread to a cube of one inch. A 16s would be 1/16th-inch on all four sides to form a square thread.

Flat rubber thread is numbered by stating the size of the thickness and the width. A 16 x 12 implies that the thread is 1/16-inch thick and 1/12-inch wide. The sizes used most range from 18s to 48s. Odd numbers are not used.

Round rubber thread has two dimensions — 32/36s. A 32s round thread would have a diameter of 1/32-inch and the cross-sectional area or volume would be the equivalent of a 36s thread.

* * *

SARAN AND VELON: Chemicals are the base of these fibers; after processing, the result is vinylidene chloride. Derived from ethylene, a petroleum product, and chlorine from brine.

Saran is known in popular language as a thermoplastic resin; that is, a plastic which is softened by heat and hardened into shape by cooling. It can be quickly and economically molded, and because it can be softened and reshaped again and again, little waste is occasioned. Saran is made by Dow Chemical Co., and is made into filaments and fabrics both under its own name and other names.

Velon is a filament made by the Firestone Tire and Rubber Company. At present it is available only as a monofilament.

Properties of these two fibers include resistance to chemicals, stains, abrasion, corrosion and moisture; they are nonflammable, tough, flexible as desired.

Uses are for screen cloth, draperies, luggage, shoes, upholstery.

SARELON: A new fiber which is made from peanut protein. It is light cream in color, and has a soft, pleasant feel about midway between the natural protein fibers, silk and wool. Sarelon is comparable with wool in heat-insulating and moisture-absorbing properties. It does not shrink to any appreciable amount in hot water. The fiber has an affinity for dyes used on silk and wool. Wet strength is low.

The raw material is protein obtained from solvent-extracted peanut meal; all skins must be removed since if allowed to remain there would then be the tendency of objectionable color in the fiber when produced. Sarelon is made by a *wet-process* like that used to produce viscose rayon, but is more complicated.

SHEENTEC: Trade name for flat, ribbon-shaped, single acetate rayon filaments, or for acetate yarns composed of a plurality of such filaments in a yarn. Product of Tennessee Eastman Corporation.

SILKOOL: A Japanese soybean protein fiber.

SILVALIN: Yarn made from cellulose matter . . . bamboo, cellulose pulp, cotton, jute, linen, wood or any other vegetable waste. The yarn is made on the Kron patented method which originated in Germany.

SLIT CELLULOSE FILM: Narrow cellulose film sheets which may be used as yarn, alone or in combination with other yarn to give novel effects in woven or knitted fabrics.

SOLKA: It is manufactured from spruce wood pulp by the viscose process. It is quite similar to cotton, but contains more cellulose and has a much shorter fiber. Solka is spun into coarse yarns, which are used for upholstery and drapery fabrics, rugs, shoes and handbags.

SOYBEAN FIBER: The fiber produced from the soybean is of protein base. It resembles wool in resiliency and feel; it is insulative, and has a tensile strength about 80 percent that of wool. It excels wool in resistance to alkalies.

The soybeans are crushed into a meal, which is treated with a saline solution to extract the protein. This extract is subsequently changed into a viscous solution, which is spun into fiber by methods similar to those used

to produce other fibers. The fibers are in a fluffy mass and resemble scoured wool. Fiber strength is not affected by moisture.

Some of the potential uses of soybean fiber include blending with wool to give a soft quality to upholstery, suitings, and felt.

SPUN RAYON: The long continuous rayon filaments produce rayon fabrics having smooth surfaces or crepe surfaces. The filament can be adapted for other effects by cutting it into short uniform lengths of from ½ to 9 inches. These lengths are spun into yarns similarly to the spinning of cotton or wool. Such spun-rayon yarns have an entirely different character from the ordinary rayon yarns.

According to the amount of twist inserted in the spinning process, spun-rayon yarn can be made stronger, less lustrous, and adaptable to napping and other finishes, thus producing fabrics that resemble wool, linen or cotton. Such short-staple rayon can also be combined with any of the natural fibers to make effective and useful fabrics; this blending would not be possible with the long rayon filament. Thus, spun rayon provides new finishes and a variety of low-priced fabrics that formerly were made only from natural fibers, with a consequently higher production cost.

Some spun-rayon fabrics are known by such trade names as Avisco, Fibro, and Teca; there are many others that do not have specific trade names.

STAPLE FIBER: Filaments which have been cut to the length of various natural fibers. The fibers may be spun on the cotton, wool, worsted, flax or silk systems and are very popular in dressgoods of many types. The yarn is often mixed with other major textile fibers in varying amounts to bring about new yarn and cloth effects.

STREX: An elastic fabric without rubber produced by the United States Rubber Company. Elasticity is imparted by twisting cotton yarn into the shape of a coiled spring. The material can be given various degrees of elongation, with a maximum of about 100 percent.

Strex withstands repeated laundering and dry cleaning. It has been used for slip covers, gloves, surgical bandages, and sweaters.

STRONG FIBRO: Rayon staple fiber made by Courtaulds, Ltd., of Coventry, England. The product is comparable with Avisco.

STYLON: Sometimes referred to as *fiber-dust,* the product may be applied to an adhesive-treated fabric under air-pressure, following a definite and previously arranged motif or design. Stylon is suitable for dress fabrics.

SYNGLOW: A very fine web-like product made of fiberglas and encased in a hard but pliable and almost transparent plastic. The very smooth type goes under the name of Synskyn. Both may be easily cleaned with soap and water, are mildew-resistant and flameproof. Have been developed from research conducted on radar panels.

SYNSPUN: A fiberglas fabric in which the fibers are matted loosely and set with plastic. Used in modern paneled screens, the product is washable and fire-resistant.

SYNTHETIC FILAMENTS: These may be classed as man-made fibers of indefinite length produced in the laboratory. Examples include Nylon, Vinyon, Dacron, Dynel, Orlon, etc. Nylon and Vinyon are examples of true synthetics, resin in nature.

* * *

TECA: Registered trademark of the Eastman Kodak Company for rayon piece goods, and of the Tennessee Eastman Corporation for cellulose acetate fiber.

TECAFIL: A true spun yarn but made up of fibers of various lengths rather than the customary uniform lengths. It is made directly from a tow or strand of continuous filament, using a modification of the patented Perlok System of continuously breaking and drafting the parallel filaments to form a roving which is then drafted and twisted into a yarn.

TEMPRA: Trade name for high tenacity type of viscose process rayon yarn made by American Enka Corporation.

TENACELL: Made from wood cellulose by controlled chemical procedure, this product is high in purity and uniformity. Converted into a perfect viscose spinning solution with a minimum use of other chemicals, Tenacell is used in the manufacture of high tensile strength yarn such as tire yarn.

TENASCO: Trademark name for an especially strong type of viscose rayon yarn made by American Viscose Corporation.

TENSYLON: A product of the Tensylon Corporation, this is the name for a *tensilized* rubber hydrochloride yarn-like product. The raw material, Pliofilm, is cut into strips, tensilized or stretched, rolled on itself or wrapped around other material according to the effect desired, and bonded.

The properties of tensylon are good tensile strength, eight to thirty percent elasticity, high flexibility, imperviousness to water, weak acid, alkali, oil, perspiration, mold, moths and grease. Fabrics can be cleaned with a damp cloth.

Textile uses include braids of all kinds, woven drapery and upholstery fabrics, especially those exposed to hard wear, bags, shoes, table covers, ribbons, sewing thread, suspenders, and others.

TERYLENE: The term is coined from the words terephthelate and polythylene, synthetic substances. Somewhat resembling nylon, terylene can be stretched five times its original length without losing firmness. Made in various thicknesses and widths, it can withstand bright light, and will iron, launder, and press without any special precautions. Terylene is not affected by moisture, chemical mixtures, or micro-organisms. The product is still in its early stages of development.

THIOZELL: A German casein fiber.

TIOLAN: A German fiber in which milk casein has been mixed with latex and glue.

TITANOX: This includes: Titanox-AMO (titanium dioxide) for internal delustering of viscose rayon and for preparation of external delustrants or dullers; Titanox A-No. 24 or Titanox AA (titanium dioxide) for internal delustering of acetate rayon, and Titanium Sulfate Cake for the preparation of titanous sulfate strippers.

TYGAN: A British man-made woven fabric which possesses the qualities of leather and is suitable for upholstery. It can be sewn, tacked and manipulated in the same manner as other upholstery fabrics. Also used for blinds and shades, radio screens and lamp covers.

The fabric is made on especially equipped looms from extruded monofilaments called Bexan. This product comes in gauges 0.010 to 0.012. There is no limit as to range of color, width and weight. Tygan is ideal for beach use since salt air and salt water have no effect on it; it is not susceptible to mildew, bacteria, fungi or other micro-organisms. Reflecting heat, it is warm in winter and cool in summer.

TYRON: The name given to high tenacity rayon yarn used for tires. Its strength- and heat-resistance make it possible to produce tires to give longer mileage and conserve rubber.

VELON: A trade name used by the Firestone Tire and Rubber Co. for extruded plastic filaments used to weave into fabrics for automotive aircraft, home and upholstery uses.

VICARA: Produced from protein by Virginia-Carolina Chemical Corporation, it is comparable in many ways with wool, a natural protein fiber. Vicara is easy to spin, weave and dye, and it blends readily with other fibers such as cotton, nylon, rayon and wool. It imparts a luxurious, cashmere-like appearance and a soft, comfortable hand or feel in fabrics where it is used. Properties include high absorptiveness, moth- and mildew-resistance, and it will not shrink like wool. Vicara will improve blends of many types for use in blankets, dresses, hosiery, knit goods, sports clothes, suits and upholstery.

VINYL-BUTYRAL PLASTIC: Long used as interlayer material in safety glass, this product may now be used as a textile coating material for stain-proof tablecloths, furniture slip covers immune to ink, and draperies that can be wiped clean with a damp cloth.

Application may be carried out on existing coating machinery. The fabric treated is bonded with a super-thin, almost invisible vinyl-butyral which is reputed to cause no chipping or peeling under normal usage conditions. Repeated laundering may be given the treated articles, while pressing is done on the untreated side with a moderate iron. Product of Monsanto Chemical Co.

VINYON: A non-cellulose man-made fiber, it is made from vinyl resin, which is derived from natural gas (or coal), salt, water and air. In the form of a dry powder, the vinyl resin is dispersed in acetone. It is then filtered and deaerated by allowing it to stand for two days. The spinning process is somewhat similar to that of other man-made fibers. After extrusion of the filament, which is twisted while wet, the yarn is stretched to about 140 per cent of its original length, and is permanently set in this form by immersion for several hours at 150 degrees Fahrenheit. It is then wound in skeins or on cones.

As a result of this stretching process, the strength of vinyon yarn is tripled, and it has a degree of elasticity that compares favorably with silk and wool. This quality makes it suitable for hosiery. When wet, vinyon does not lose its strength.

This fiber is made in two forms: continuous filament and short staple. The short-staple form is mixed with cotton or wool for use in felt and for fabrics in which creases or folds must be retained. When first produced, the continuous-filament yarn was made in denier sizes of 60, 120, and 180, being composed of 46, 92, and 138 filaments, respectively.

Vinyon yarn is not affected by moths, mildew, or age; it does not support combustion, and can be softened only at a heat of about 290 degrees Fahrenheit. The effect of sunlight is very light; water absorbency is very low. Vinyon is not affected by acids, alkalies, or almost any other chemical with the exceptions of acetone and carbon tetrachloride.

VINYON N: Basically different from other vinyl materials, it is produced from a white, powdery resin which results from the copolymerization of vinyl chloride and acrylonitrile. This resin is dissolved in acetone and is spun on equipment similar to that used to make acetate rayon.

The natural color of the product is light gold and it may be dyed with regular commercial processes using a wide range of acetate and vat dyestuffs.

The fabric will not mildew nor support bacteria, mold or fungi. Electrical insulation properties are good, perspiration does not have any effect, and exposure tests show no indications of allergy reactions. Warm to the touch and with a hand on the order of silk, the material may be used in bathing suits, dressgoods, filter fabric, foundation garments, rain and sportswear.

VISCA: When a viscose solution is forced through a narrow slit instead of a small single hole in a spinneret, a lightweight but strong ribbon-like material is produced that resembles straw. It is called visca. These narrow strips are useful in making costume accessories and in the manufacture of upholstery and millinery. They can be combined with other fibers to produce lustrous effects.

VISCA BRAID: A highly lustered braid made of visca straw or composition fiber used in the millinery trade.

VISTRA: Acetate or viscose fibers changed in physical properties to give increased strength, rough surfaces, crimp, etc.

VISTRALAN: A German viscose product chemically modified to increase its affinity for acid dyes.

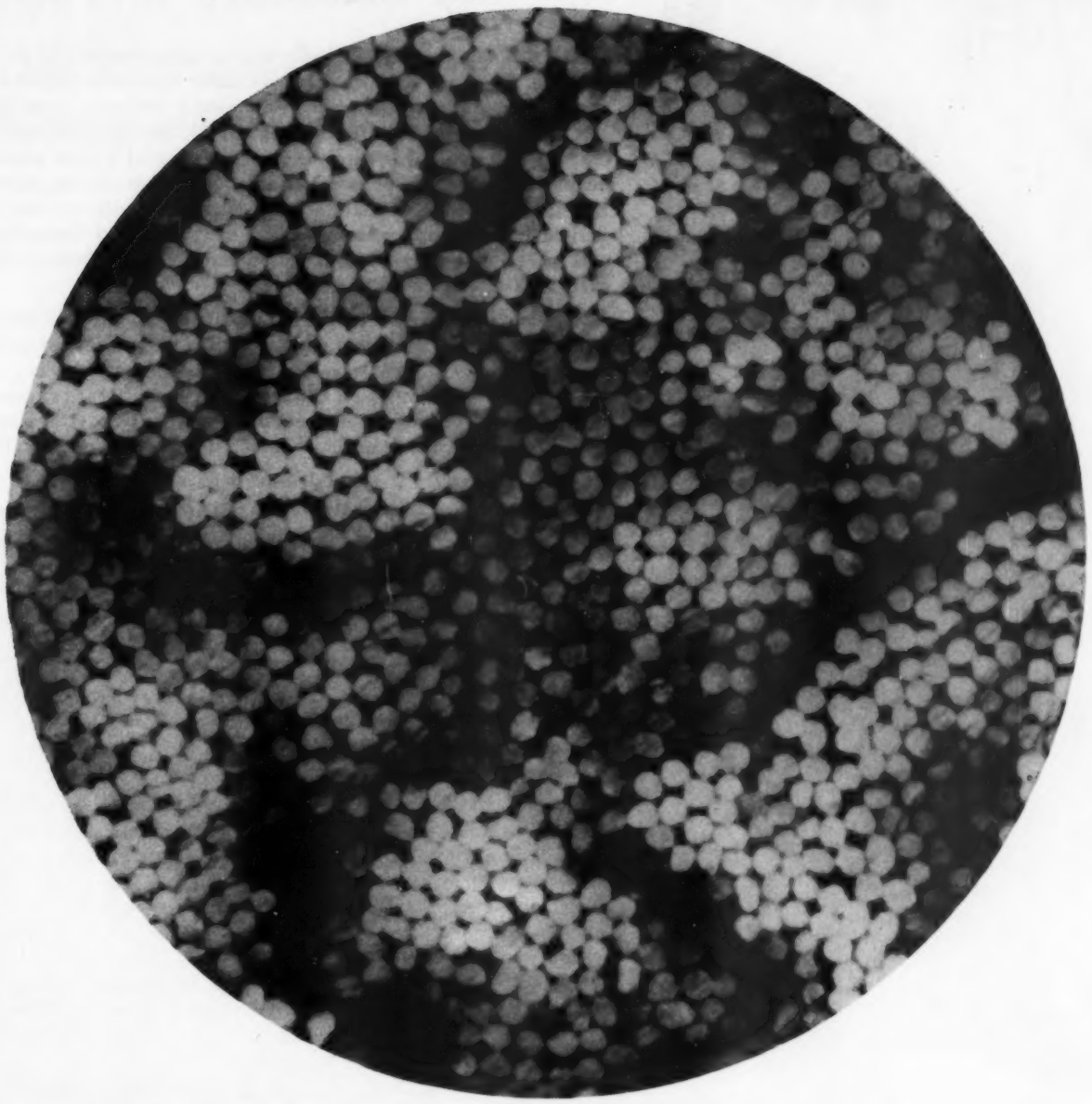
* * *

WATERPROOF PLASTIC WOVEN FABRIC: Saran filament fabric used in upholstery which is given special waterproofing treatment.

* * *

ZEIN: A protein fiber made from corn meal. The fibers are obtained by extruding the zein solution through spinnerets into a coagulating bath while simultaneously contacting the zein with a reactive aldehyde, such as formaldehyde, and subsequently subjecting the resultant fibers to elevated temperatures.

ZELAN: The du Pont registered trademark for its durable repellent finish. Zelan is a finish and not the fabric or the garment. Fabrics treated with the finish shed rain, snow, and water, resist spots and stains with the exception of grease, and resist perspiration. They also wrinkle less easily.



THE STORY OF BEMBERG

Why the rayon fiber manufactured by the Cuprammonium and Stretch-Spinning Process imparts unique qualities to finished fabrics.

THE ORIGIN and MANUFACTURE of BEMBERG RAYON

WHILE THERE ARE MANY basically similar characteristics in the various types of rayon filament, Bemberg possesses many distinctive qualities because it is manufactured through a process completely different from the rest. When de Chardonnet solved the problem of making, through chemistry, a fiber duplicating that produced by the silkworm, he opened a door which gave textile chemists a vista of the potential horizon. A number of companies then learned how to compose the various chemical elements to attain a fiber which looked and performed more or less like silk; the problem of dimensional difference was solved by forcing the liquid solution through tiny holes of differing diameters according to the required deniers.

The Bemberg Corporation, in 1905, introduced Bemberg fiber with the revolutionary announcement that it had mastered the problem of varying thickness in a completely different way . . . the stretch-spinning process . . . whereby the size of the hole in the spinneret is always the same, but the degree of fineness is obtained by stretching the filament as it emerges through the apertures in the spinneret and passes through a funnel. (See diagram on page 87).

Filament Refinement

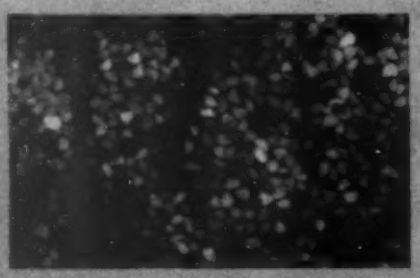
What results from this revolutionary technical concept is a fiber which is as fine in diameter as natural silk, without diminution of strength or of any other desirable characteristic. In fact, Bemberg is being produced and used in a fineness of less than one-half denier per filament! For further understanding of how the stretch-spinning process enables the technician to control the refinement of the filament, here are some comparisons:

To produce a 100-denier fiber of viscose rayon requires only 40 filaments; acetate rayon, 34 filaments; silk and Bemberg require exactly the same, 74 filaments. In other words, Bemberg is almost twice as fine as viscose rayon in the same denier, more than twice as fine as acetate rayon and, in fact, as fine as natural silk.

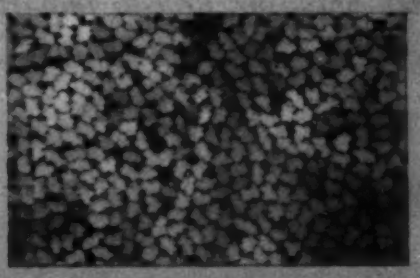
Thus it becomes apparent why the weavers seeking to manufacture fabrics of unusual lightness and sheerness turn to the use of Bemberg yarn; and in turn it becomes obvious why the consumer seeks out Bemberg for both wearing apparel and home decorative purposes when the call is for a lighter, filmier fabric. What makes this even more striking, however, is the fact that, despite its fineness, Bemberg manages to retain so many other outstanding qualities called for by the American consumer. For instance, all rayon yarns lose strength when wet, but regain their original strength after drying out; Bemberg exceeds other types of regular-strength rayon in both wet and dry strength. This is a point of importance not only to the consumer but to the weaver and even to the manufacturer of the finished product.

In addition, the stretch-spinning process and the large number of filaments in each strand of yarn impart to Bemberg a rich, dull luster, since they break up the light reflection; this luster is not affected by either laundering or dry cleaning since it is mechanically rather than chemically achieved. Still further, because the fiber is of a natural whiteness, it not only takes commercial dyeing to any hue or tint, but women are keenly impressed with the facility with which they can do home coloring of a Bemberg fabric. *(please turn the page)*

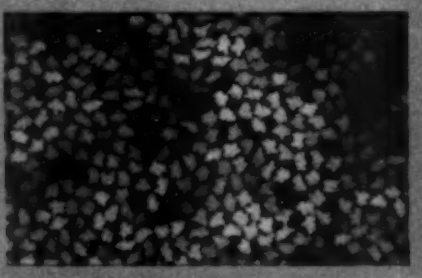
Microphotos of Silk and Rayon Fibers



SILK



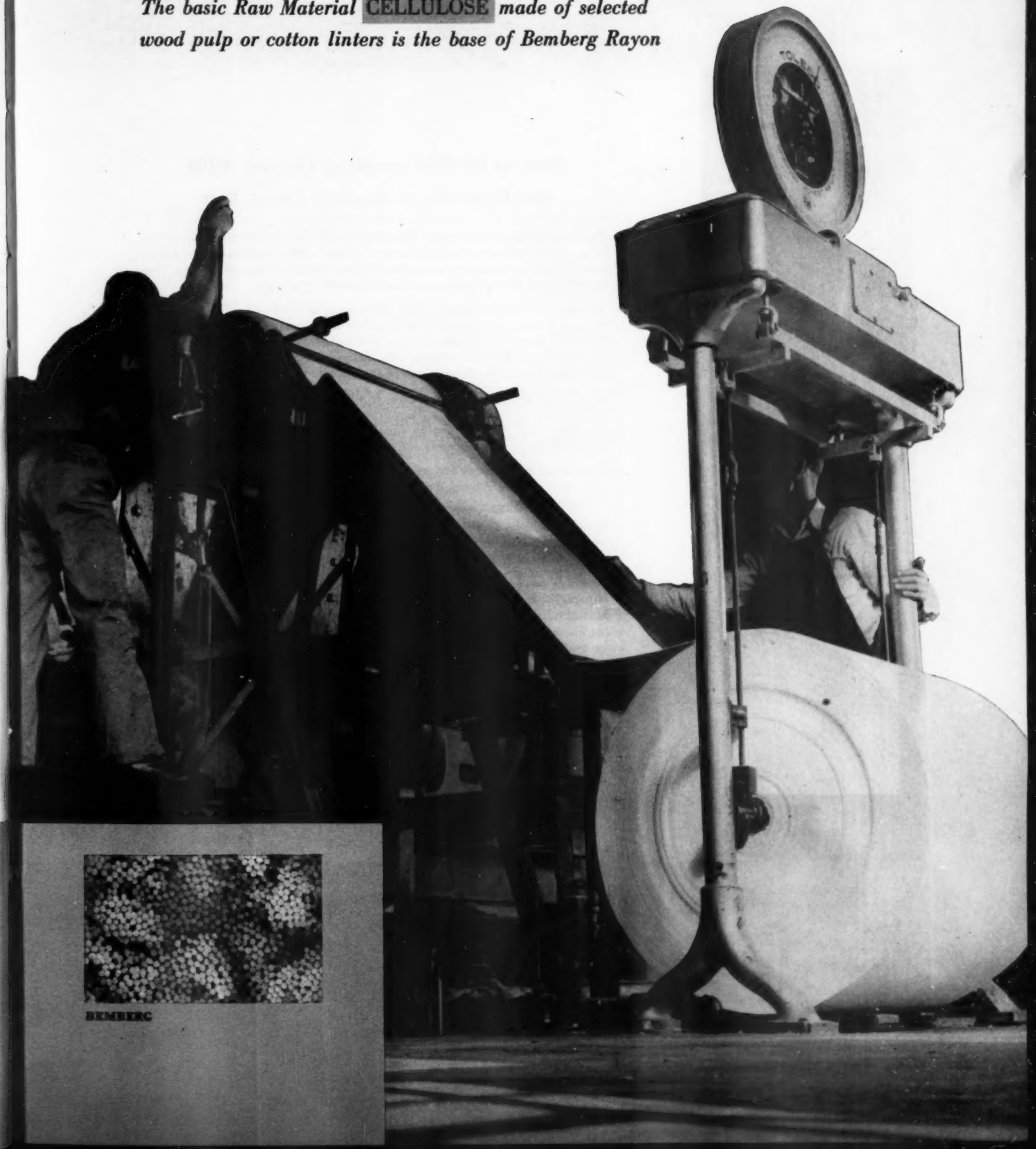
ACETATE



VISCOSE

$+C +H +O = (C_6H_{10}O_5)_n =$

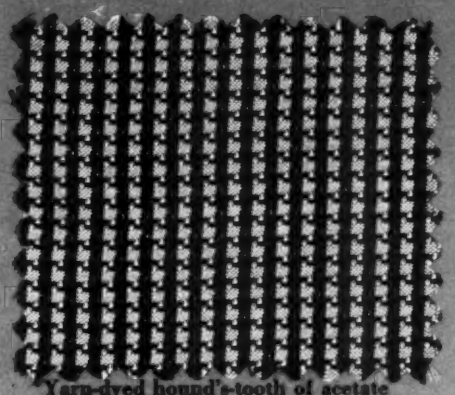
The basic Raw Material **CELLULOSE** *made of selected wood pulp or cotton linters is the base of Bemberg Rayon*



BEMBERG

Bemberg and viscose rayon jacquard by S. J. ARONSOHN

Jacquard brocade of Bemberg and viscose rayon by HAFNER



Yarn-dyed hound's-tooth of acetate and Bemberg rayon by ONEIDA

Two-bar tricot of Bemberg rayon by BEAUNIT MILLS

Some of the Distinguishing Characteristics and Properties of Bemberg Rayon Yarn

Bemberg is a Cuprammonium Rayon. It is made of cotton linters or fine wood pulp, which is dissolved in a solution of copper sulphate and aqueous ammonium to form a cuprammonium solution. It is rich blue in its original state, but is washed and bleached to a natural white before spinning.

Bemberg is Stretch-Spun to Size. Whereas other forms of rayon are manufactured in varying diameter filaments by extrusion through spinnerets punctured with tiny holes of differing size, the Bemberg filament is always the same diameter upon extrusion; but a patented process of stretching the filament alters the diameter to any required fineness.

Bemberg is as Fine as Natural Silk. It is the only rayon yarn which, in commercial quantities and practical application, can be spun to the same thickness as natural silk. When numerous filaments are spun together, the result is a dull-lustered yarn of fine hand and smooth texture.

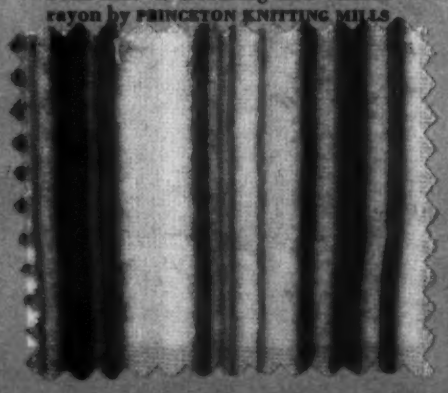
Bemberg is a Relatively Stronger Rayon. While all rayons lose strength when wet and recapture it when dry, Bemberg is stronger than other rayons when either wet or dry.

Bemberg is Easy to Dye, Easy to Launder or Dry Clean. Because it is pure white in its initial stages, Bemberg has a fine affinity for all colors; it requires no special care in washing or laundering beyond that given similar fibers.

Bemberg can be Woven or Knitted. The fineness of the filament and its non-slip quality make it a sound fiber for use in a broad variety of both woven and knitted fabrics for apparel and home furnishings products.

Similarity between the silk cocoon and the mechanical spinneret

Bemberg rayon matelassé with cotton backing by CLASSIC WEAVING



Fluff-knit of Bemberg and viscose rayon by PRINCETON KNITTING MILLS

Satin brocade of Bemberg and viscose rayon by GEORGE HIRSCH SONS

Sueded glove-type fabric of Bemberg rayon by WILLIAM WINKLER

All-Bemberg rayon crepe by BURGESS FABRICS

Bemberg rayon jacquard with viscose motif by HALEDON

The Story of Bemberg . . . continued

It is not only in the field ot woven fabrics that Bemberg is widely used; it is commonly found in every type of commercial knitted cloth including weft knit, warp knit, flat knit or circular knit. Despite its dull luster Bemberg is a fiber which does not slip or shift; and because of its fineness knitters have found it possible to produce knitted fabrics of superior sheerness and lightness, two qualities which have opened up a number of new fields to the knitting field of the American textile industry.

Education at all Levels

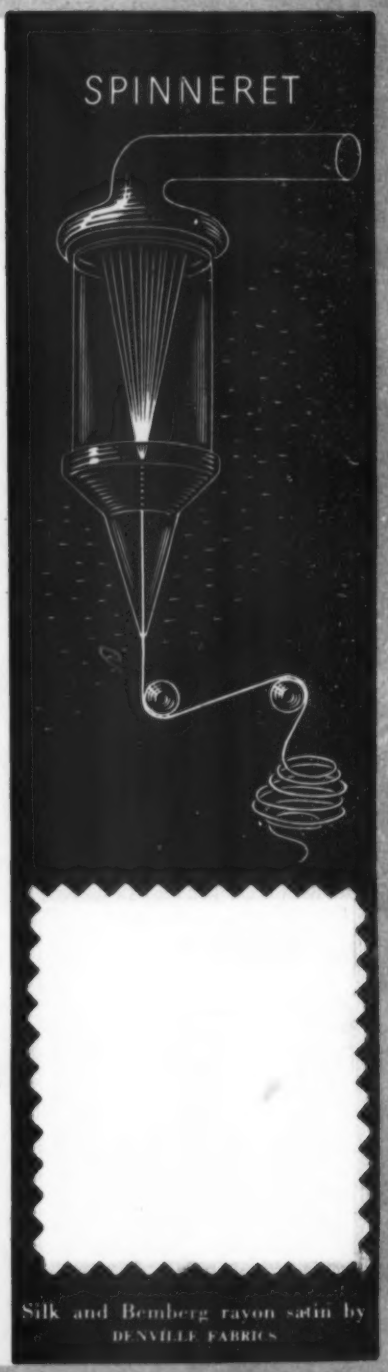
Because there is so wide a span between the cotton linters or wood pulp dissolved in ammonical copper solution and the gossamer sheer dancing dress which is an end result, the management of American Bemberg years ago undertook a forward-looking program of education. This begins at the weaving or knitting level where skilled technicians from American Bemberg work right in the textile plants assisting them to handle and finish the goods properly. From there it progresses to the manufacturing level where, in close consultation with the designer, the piece goods buyer, the cutting and sewing forces and finally, the sales force, the characteristics of Bemberg are explained in terms of practical application.

Next comes the stage of retail buyer and sales clerk education; regular clinics in the stores are staged, in which Bemberg representatives outline the selling as well as the proper care of Bemberg merchandise. And, finally, at gatherings of women and in schools the ultimate users of Bemberg in any form are told what such merchandise offers and how to get the greatest benefit from it.

* * *

As one examines the striking diversification of Bemberg fabric types, it is evident that there is a marked difference between Bemberg and other rayon fibers. The difference begins at the very first step when, instead of extruding the liquid to a given diameter, the filament is *stretched* until it reaches the desired size through attenuation. The story of Bemberg thus provides a valid illustration of the development of man-made fibers toward new perfection. The production through technical ingenuity of some qualities, formerly combined only in natural fibers, here reaches a very high peak.

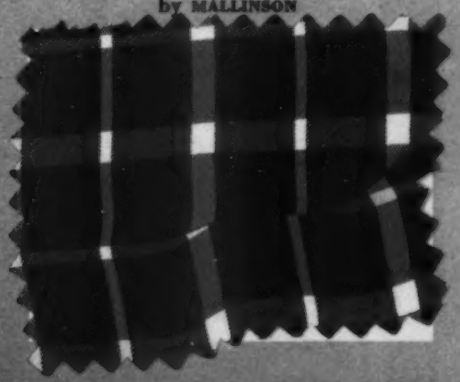
(please turn the page)



Silk and Bemberg rayon satin by DENVILLE FABRICS

Silk and Bemberg rayon print by CHANTILLY

Bemberg rayon sheer, acetate check by MALLINSON

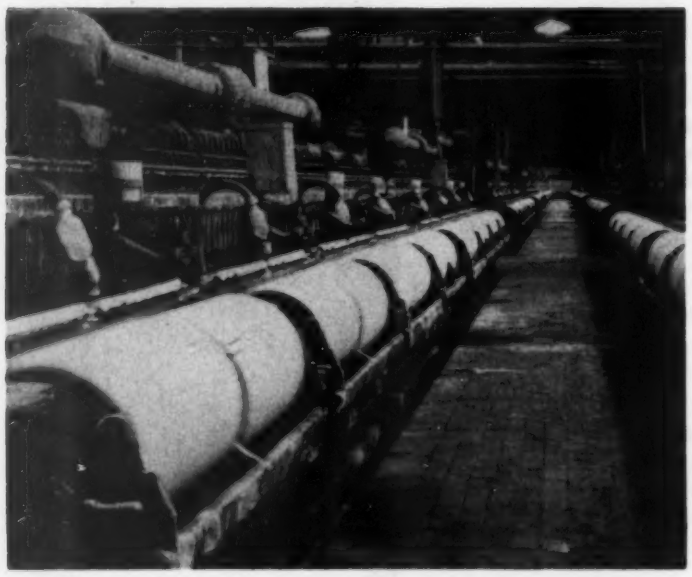


Transparent velvet of Bemberg and viscose rayon by MARTIN FABRICS

Cotton linters, a basic raw material for producing cuprammonium cellulose yarns

THE BEMBERG SPINNING PROCESS

Bleached linters are scooped into a funnel through which they pass to the solution mixer where they are dissolved



The spinning machine comprises long banks of spinnerets, through which the solution is forced to form the filaments

The skeins are decoppered and then washed in soap and water, which renders the yarn white and lustrous

Eight Steps in the Making of Bemberg Yarns

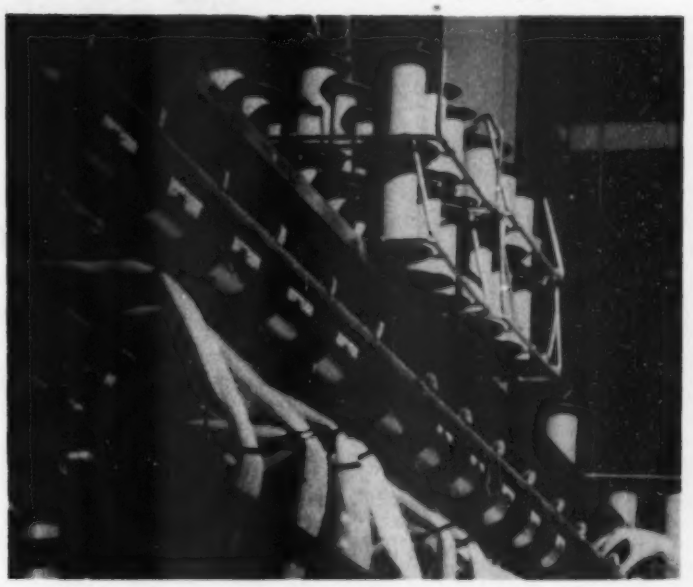
The chart alongside depicts the most important steps in the manufacture of cuprammonium cellulose yarns by the Bemberg stretch-spinning process. These process steps give Bemberg rayon its distinctive qualities of evenness, fineness, suppleness, characteristic luster and strength. The diagram on page 84 shows how the fineness and evenness of Bemberg rayon yarn compares with silk and with rayon yarn of identical denier spun by different processes.

1. RAW MATERIAL. Cotton linters or wood pulp.
2. WASHING MACHINE in which raw material is bleached a pure white. The only bleaching required of Bemberg rayon yarn is accomplished at this point.
3. SOLUTION MIXER where the bleached cotton or wood pulp is dissolved into a cellulose solution by the addition of copper-ammonium (ammonical copper oxide) liquid.
4. SOLUTION FILTER where impurities are filtered out, leaving a pure, clean spinning solution of a dark blue color.
5. SPINNING SOLUTION STORAGE TANKS where aging takes place to bring the solution to maturity.
6. SPINNING BATH SUPPLY of a liquid that brings about coagulation of the filaments after they leave the spinneret.
7. STRETCH-SPINNING APPARATUS. The cuprammonium spinning solution after being forced through holes in a spinneret is stretched and spun here into the finest filaments produced by man commercially. The size of Bemberg rayon filaments is not limited by the size of the spinneret holes, but achieves fineness through the use of the unique stretch-spinning device.
8. FINISHED YARN wound on reels in skein form. Later put in skeins and comes for use by manufacturers.

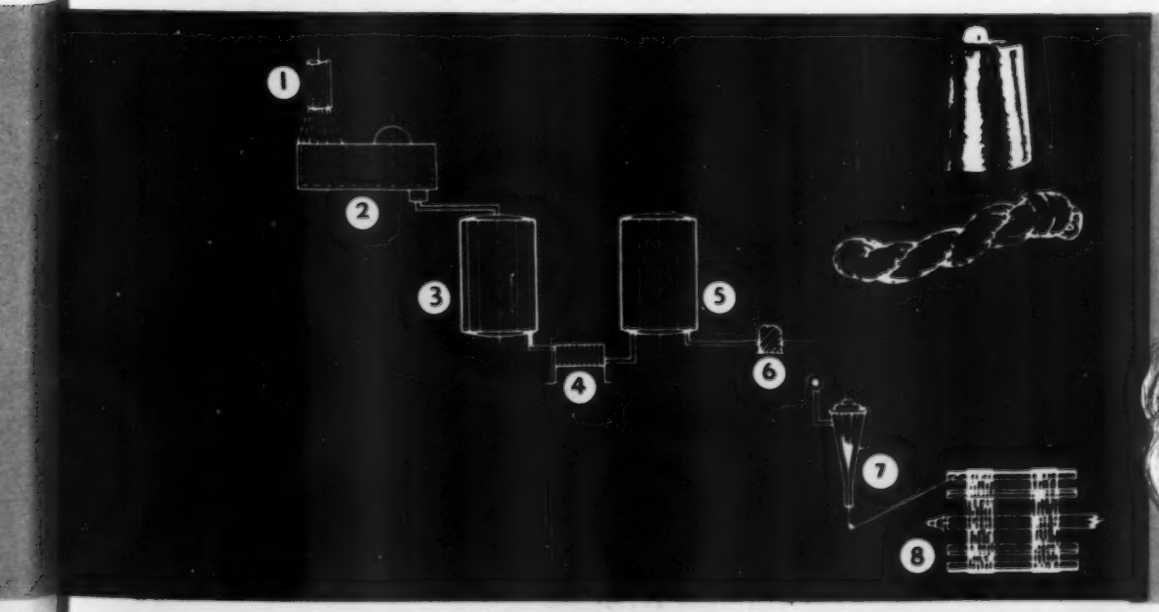
Banks of filters are used to purify the cuprammonium solution which has the consistency of honey

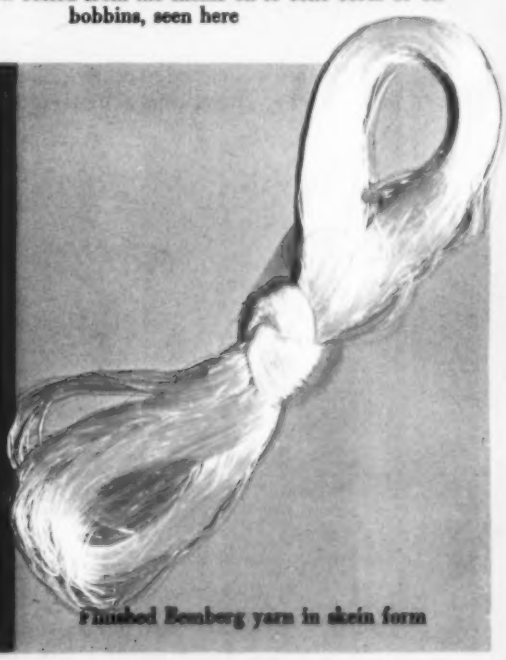
A period of aging in large storage tanks brings the solution to the necessary condition for the stretch-spinning process

Finally the skeins are hung in bundles and in this form the yarn is passed through the dryer.

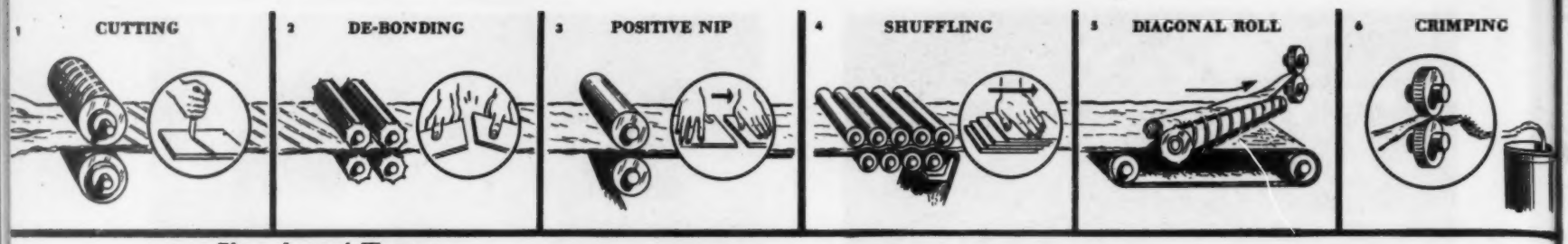


The yarn is now reeled from the skeins on to cone cores or on bobbins, seen here

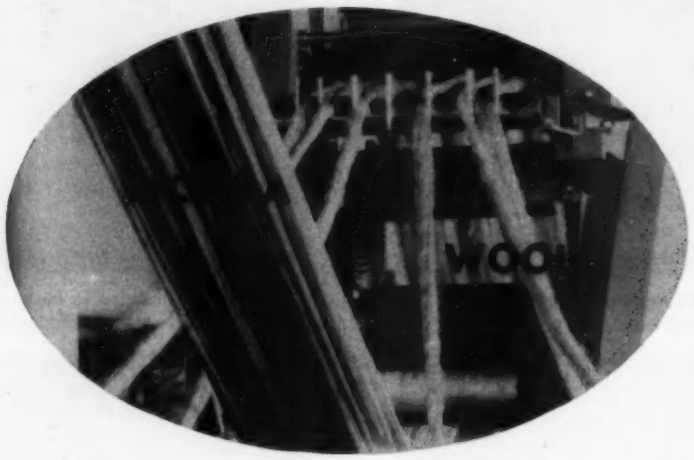




Finished Bemberg yarn in skein form



Flow chart of Warner and Swasey's Pacific Converter which cuts and combines man-made fibers with other man-made or natural fibers, forming a blended and crimped sliver.



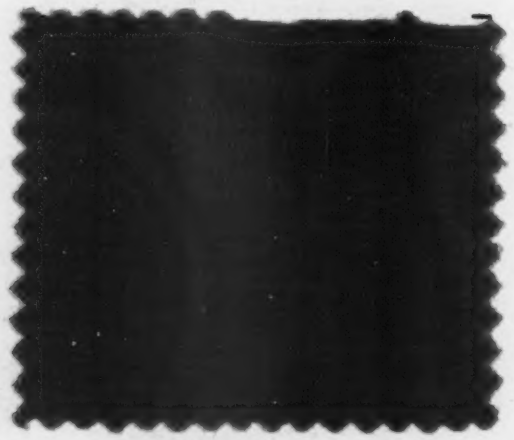
NEW DIRECTIONS IN BLENDING

Vicara provides many added qualities when blended with other fibers, and is superbly adapted for this purpose

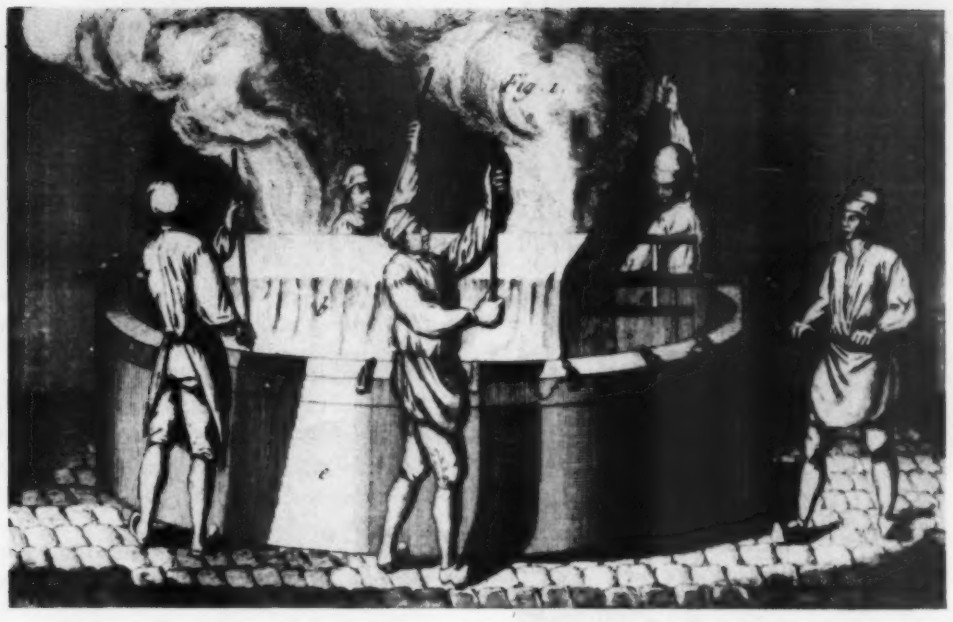
AS THE DIFFERENT CHEMICAL companies introduce a new fiber, it is explained as being either a substitute for a natural fiber or an improvement on one already existing; but primarily it is always marked as a fiber which can stand on its own feet as an effective performer. In the case of Vicara, however, there is no such claim; in fact, Vicara from the very beginning was engineered mainly as a *blending* agent, one which, added to other fibers, could provide desirable qualities not inherent in any one fiber alone, thus enhancing the finished fabric.

In a past issue of AMERICAN FABRICS (Issue 13, page 106) the editors recounted the performance of Vicara in support of the various other types of fibers, both natural and man-made. The first experiments made in laboratories indicated that not only did Vicara contribute its own native virtues but, in the great majority of instances, actually improved the blend. The two knitted cloths shown on this page, from current showings, indicate that Vicara plays a stellar role in support of any other good fiber, and illustrate why blends are gaining in acceptance.

Jersey knit blend of Vicara and worsted
by I. A. WYNER AND CO., INC.



Jersey knit blend of Vicara and nylon
by WILLIAM HELLER, INC.



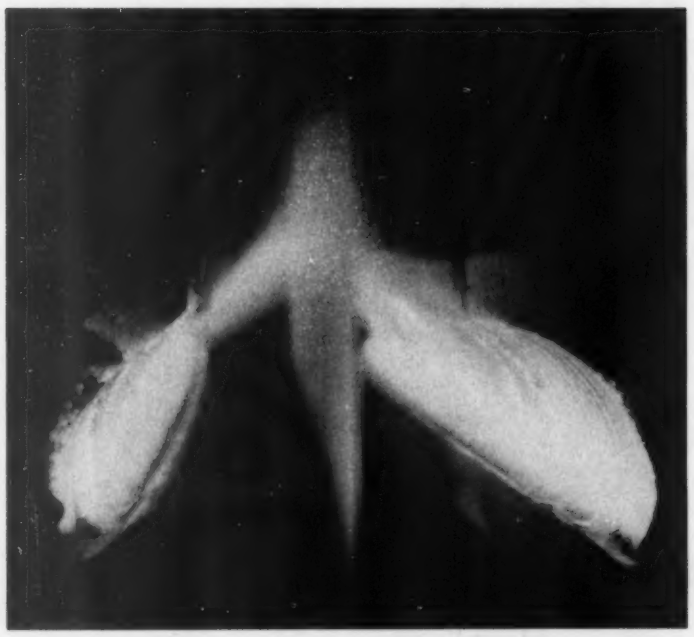
18th Century engraving showing method of dipping cloth in large vats containing dyestuffs. With essentially the same technique, high speed machines today produce more uniformity.

HOW RAYON FABRICS ARE DYED AND PRINTED

In a journey through a modern textile finishing plant, the camera portrays the many processes through which rayon grey goods are converted to beautifully dyed and colorfully printed fabrics.

Before the advent of chemical bleaching, workers spread lengths of cloth on the ground and let the sun's rays whiten the fabric. The same result is obtained today by a machine in a space of minutes, without in any way damaging the delicate fibers that make up the cloth.

Lengths of grey goods are stitched together



Surface irregularities and fuzz are singed off

For special textures the cloth is embossed

FOREWORD

Since the earliest civilizations man has always tried to improve and embellish the materials with which he adorns his body and his home; and through the ages he has discovered and developed many wonderful techniques for the processing and finishing of cloth. Our age is the inheritor of these techniques, and as a result of American technology we are able to provide the masses with cloths undreamed of before and to improve and develop enormously the traditional processes.

In this story we take the reader through a typical plant and show, step by step, what happens from A through Z. It is truly a fascinating and inspiring thing to see a bale of grey goods go through a series of intricate processes and emerge as a beautifully dyed and patterned cloth possessing qualities which were absent at the start.

While the equipment and the processes shown here are those used specifically in working with rayon, essentially the same steps are followed when working with silk, cotton or nylon.

HOW RAYON FABRICS ARE DYED AND PRINTED

Showing and explaining the numerous processes through which grey goods pass to become beautifully colored prints.

Stage 1

PREPARING THE FABRIC

FROM THE VARIOUS manufacturing sections of the country, the woven grey goods, also known variously as greige or gray goods, are shipped to the finishing plant. The cloth is checked into the receiving room, the bales are opened, and a specification sheet is attached, indicating precisely what processing is to be applied to each particular lot of cloth. When the grey goods comes to the finishing plant, it is in lengths of approximately 80 yards, the usual length in which the weaving mill works; however, since modern finishing equipment operates at a fairly high speed, an 80-yard run would be inefficient, and an operator sews five, six or more lengths together to make up a single run of from 400 to 480 yards which is deemed the best working length. If the fabric is extremely light in weight, the run may go from 560 to 1,000 yards in one continuous piece.

The next step in preparing the cloth to take color (either a solid dye shade or a printed pattern) is to insure that there will

Before textile chemists learned how to remove impurities and dirt with machines, workers beat the unbleached cloth and scoured it by hand.

be no minute fuzz or particles to stand in the way of obtaining a uniform color. If, in its final state, the fabric is to have a flat finish or face, it is put through the singeing treatment.

SINGEING: The grey goods is passed through a flame at the rate of from 80 to 100 yards a minute; at this speed, all surface irregularities are singed off but the cloth incurs no risk of becoming scorched.

While a flat finish is most in demand, there is also a substantial market for crepes; instead of singeing, the grey goods therefore is put through an alternative process known as embossing.

EMBOSSING: The surface irregularities are removed, and at the same time the machine embosses or imprints the top texture which is required to enhance the appearance of the finished goods, taking from 20 to 30 minutes to treat a full length of grey goods.

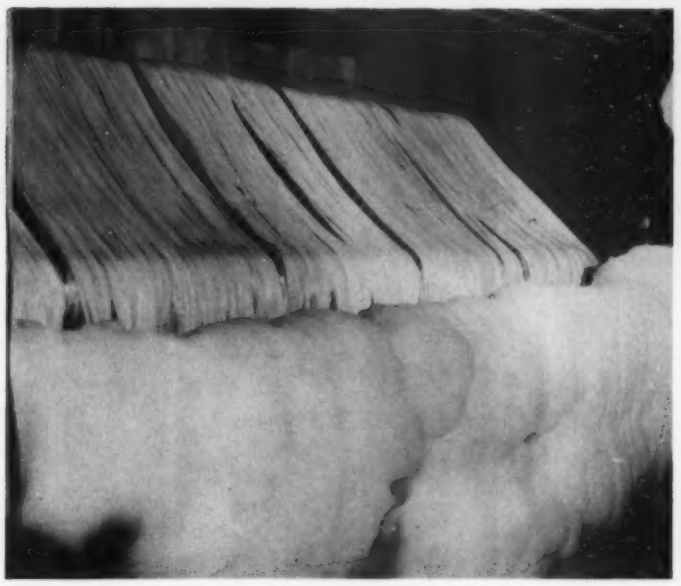
Regardless of which of the two foregoing treatments has been given to the fabric, it is now ready for the third and final preparatory treatment. This is called scouring.

SCOURING: The purpose of this treatment (also known as boiling off) is to *set* the cloth. Detergents, alkalies and soap are used in a boiling bath to remove any extraneous matter such as sizing, dirt, fugitive tints and impurities. In the case of cellulose rayons, the bath contains a cold caustic soda of appropriate strength.

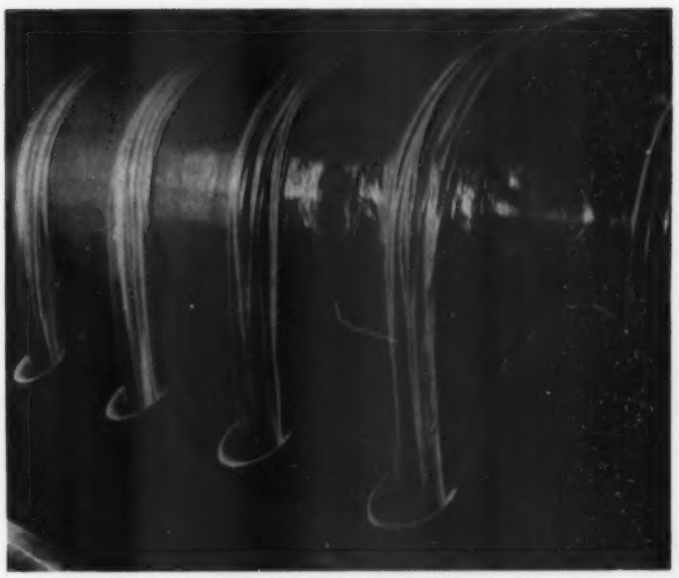
At this point the finisher has prepared a perfectly clean and uniform ground for his color work, and the cloth passes into its next phase.

(please turn the page)

When we think of the crude and laborious implements and methods used to mix dyestuffs in ancient days, it is evident that in most finished work there was the unmistakable stamp of hand work, and in some instances this lent to the charm of the dyed cloth. Today, modern machinery and the science of chemistry combine to produce uniformly smooth coloring on any cloth.

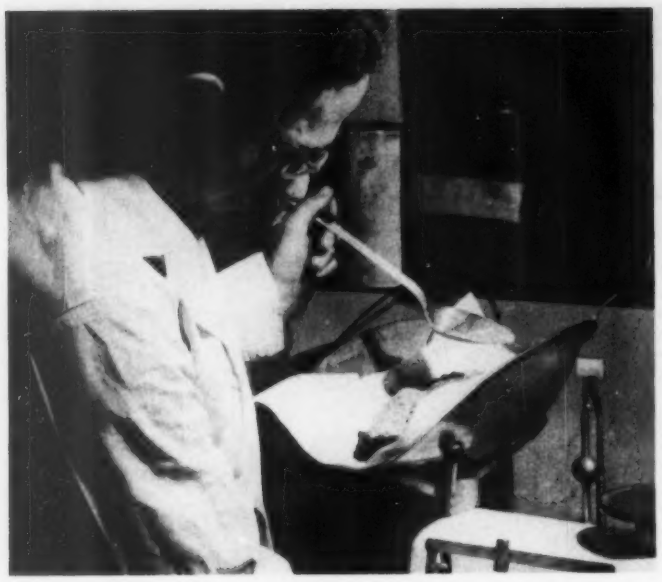


The first cleansing step is scouring



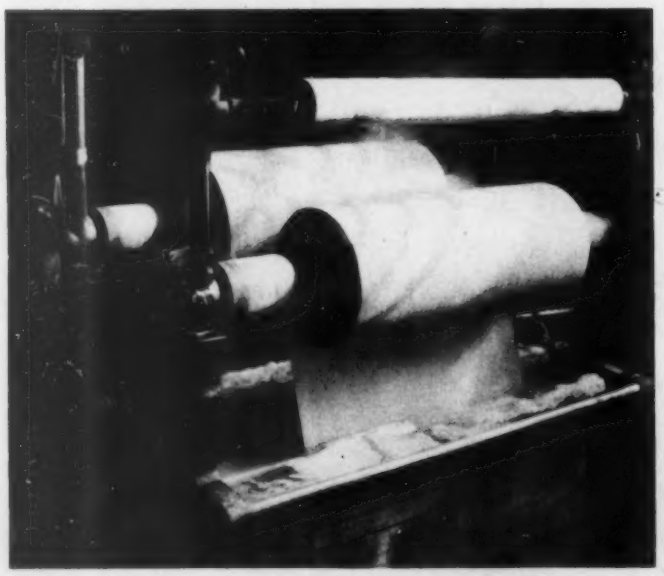
In the boil-off impurities and dirt are removed

The cloth is now prepared to take color smoothly



The chemist carefully mixes dyes to a formula

Large quantities of the dyes are mixed in buckets



The jig machine dyes fabrics open instead of bundled

Stage II

DYEING THE FABRIC

There are three distinct methods of dyeing cloth by the piece, and we will describe each of them briefly:

UNION DYEING: Many fabrics are woven with two different types of fiber, one for the warp and another for the filling. Because of the difference in their molecular construction, the two fibers react differently to the same dye, and this is why you frequently see quite striking color effects in rayons. A simple example is where a medium blue rayon cloth has a bright blue viscose stripe; though the entire fabric has been steeped in a single dye bath for a fixed period, the rayon absorbs much more of the blue than does the viscose. There are other effects, too many to enumerate; but the basic principle of union dyeing lies in subjecting fibers of differing chemical content and differing dye affinity to the same color at the same time.

CROSS DYEING: This is a refinement of union dyeing, to produce combinations of completely different colors through piece dyeing instead of dyeing the yarn first and then weaving it into a cloth. Let us assume that a fabric is to be produced which has alternating stripes of royal blue and bright red. The cloth is woven with a fixed number of acetate ends and then a number of viscose ends, alternately. When the fabric is passed through a blue dye bath, only the acetate ends will take the color, whereas the viscose fiber will resist the dye completely; then the cloth is passed through the red dye bath where their reactions are just the reverse, the viscose taking up the red dye, the acetate remaining blue.

SOLID SHADE DYEING: Where the desired result calls for a ground color of a single tone, or where a pattern will afterwards be printed on a colored ground (this represents the bulk of rayon dyeing), the following process is used:

PREPARING THE DYE FORMULA: Ascertaining the chemical composition of the fibers in the cloth to be dyed, the plant chemist prepares a formula of the dyes which will bring out the required final color; he also charts out the pertinent instructions regarding heat, speed, moisture and pressure for various department heads.

MIXING THE DYES: From the chemist's formula, the mixer blends huge buckets of dyes; these are sent to the dyeing room, where they are poured into the dye baths. But before the plant begins quantity production, the laboratory makes a sample dye test.

SAMPLE DYEING: Small pieces of the grey goods are run through the formula of mixed dye, to determine whether the reaction is precise. If color correction is required, it is done in the pilot dyeing machine before the plant runs through any large yardage. Now the grey goods is finally ready for dyeing.

DYEING: (1) The cloth is placed in the dye box in chain or rope form. Each 80-yard piece requires three minutes to make one complete revolution in the box. Total dyeing time may vary from five to twelve hours, depending upon conditions. The cloth, in the dyeing process, is not totally immersed but is circulated constantly through the dye liquor to absorb the coloring matter.

(2) When dyeing begins, soap is added to the water and the cloth is run for about twenty minutes at 120°F. The temperature is then raised to 180°F, while the cloth is given another twenty-minute run. Salt is then added, and another twenty-minute run is given to insure the best possible application of the dyestuff to the goods.

(3) After a fourth twenty-minute run has been completed, a swatch of the fabric (about 2 x 4 inches in size) is cut from the piece, dried and given to the dyer who matches the swatch for proper color shade with the official sample.

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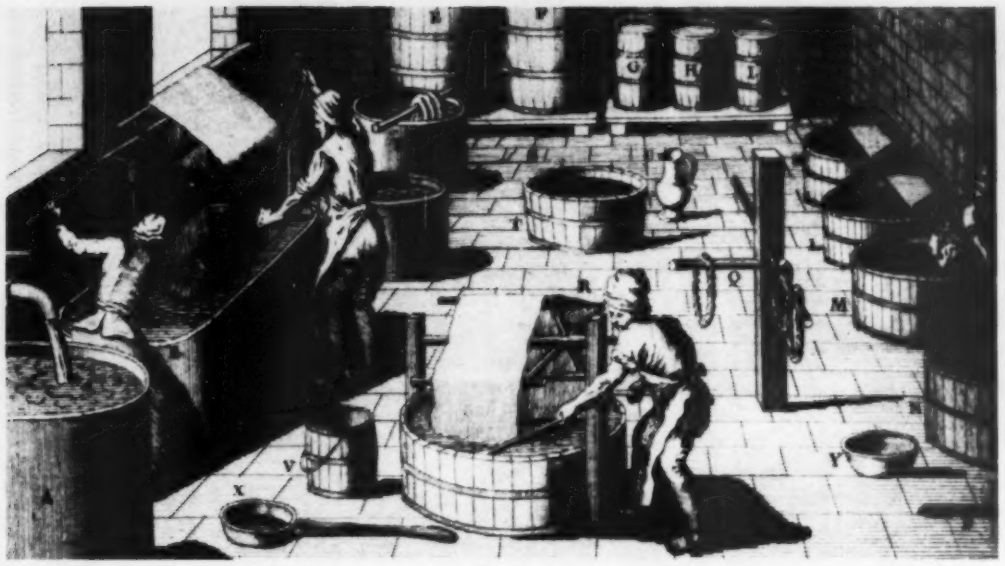


An 18th Century dye works, from an old engraving, is shown above. Comparison with the photograph below shows how the same basic principles are still used in today's precision dyeing machines. Looking between the rollers of the dye bath, we observe how the looped grey goods is drawn through the bath and up again to repeat its immersion until the color is absorbed by the fiber.

Dyeing and Printing . . . continued

(4) If necessary, more color is added in about ten minutes and the temperature is now raised from 180°F to about 200°F, depending upon the fabrics being processed and other local conditions. More salt may be added, if necessary. Salt brine seems to give the best results in dyeing.

(5) Followng a twenty-minute run, another swatch is taken from the piece. This action continues at twenty-minute intervals until such time as the dyer is certain that he has achieved the correct shade.

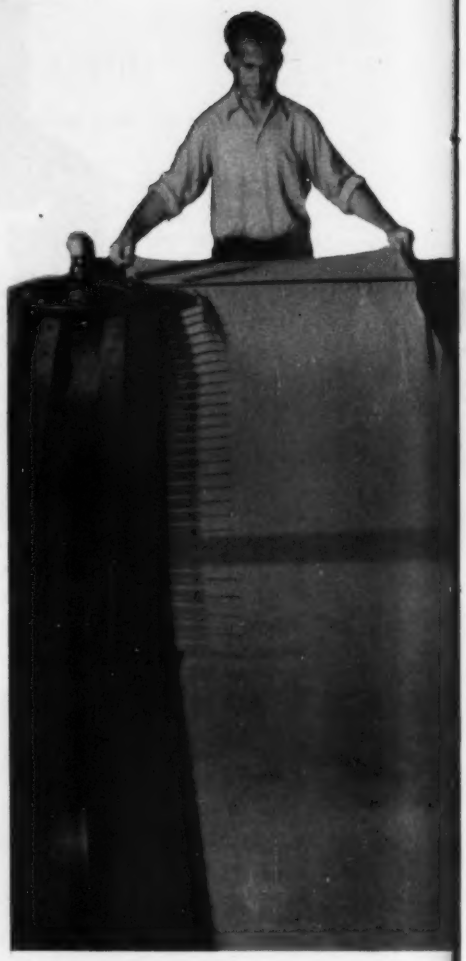
(6) The goods are now washed, taken from the dye box and then sent to the scutcher for the opening of the material to full width. Several thousand yards of cloth may be scutched in the run. The dye bath will care for about 2,000 yards of goods in a run of this type.

(7) In the scutching, which is of the vacuum-suction type, the water is sucked out by the extractor as the cloth passes over a perforated system of pipes set up for the purpose. The cloth is now ready for drying.

LOOP DRYING: In lengths of 500 to 600 yards, the dyed cloth is hung in giant loops over rollers which constantly revolve over both heat and suction dryers, until moisture is entirely removed from the fabric.

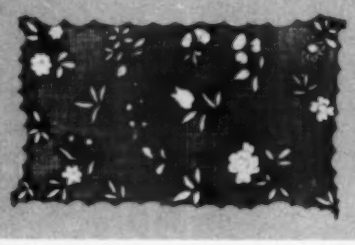
TENTERING, or FRAMING: On this machine the sides of the fabric are fastened to tiny hooks (or tenters) and as the fabric passes over steam vapor, it is brought to the required uniform width.

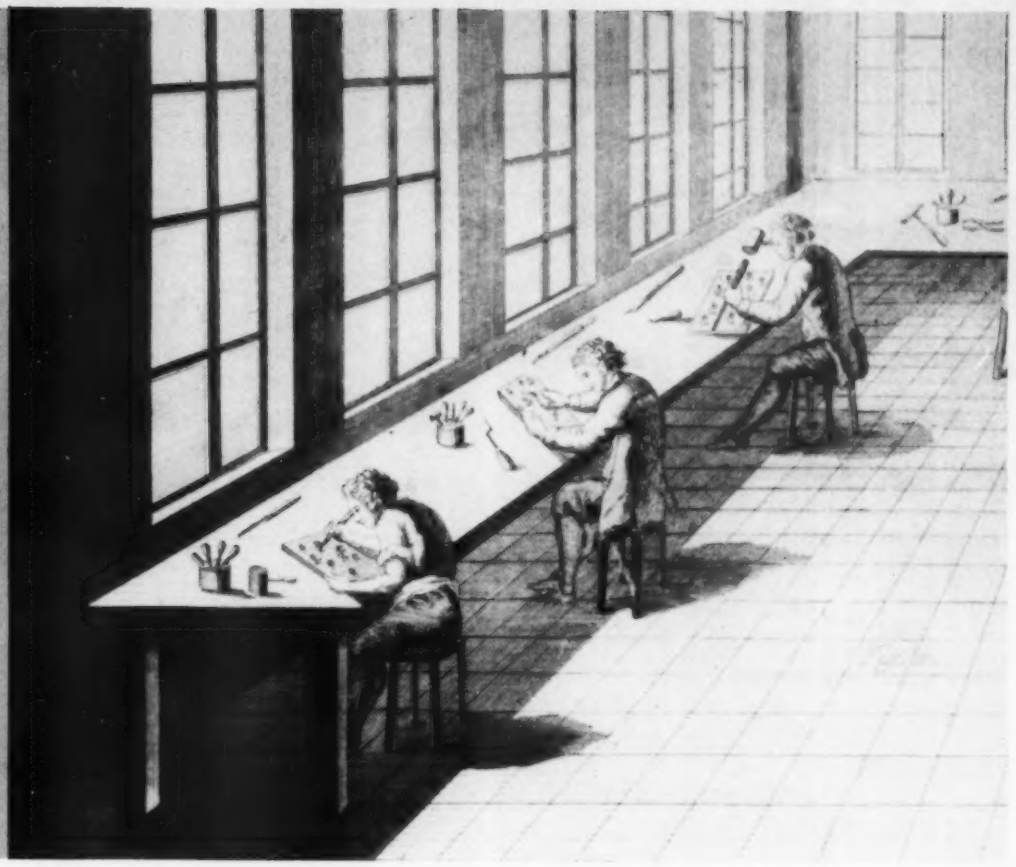
If the fabric was ordered for solid dye, cross dye or union dye, it is now ready to proceed to the finishing steps which are detailed later. But when a printed pattern is to be super-imposed on a solid dyed ground, it must go through a series of operations in the printing stage.



Below is shown a modern machine which combines both drying and tentering. Above, at left, the cloth is shown on the loop drier; right, above, the cloth is shown as it passes through the tentering machine.

In the pre-machine era, craftsmen hand-cut the design into wood or metal blocks which were then covered by dye and pressed firmly down upon the cloth's surface. Hand blocking as it is done today, using blocks of metal, wood or linoleum to convey the design, is still virtually the same as it has been for many centuries.





Stage III

PRINTING THE FABRIC

Whether a fabric is ultimately to be in a solid color or to have a printed pattern, it must go through the entire gamut of processes called Dyeing. Even where the final fabric is to contain a colorful print on a white ground, the cloth must first be bleached; or, as will be explained in detail later, it may be given a colored ground which is later removed through a process called discharge printing. Solid colored fabrics go directly from the dyeing to the finishing stage; others are subjected to the additional printing processes.

There are five main types of printing used by the textile industry.

BLOCK PRINTING: This is the oldest printing process, in which the design is carved into the surface of a block of wood, metal or linoleum; the dye is smeared over the carved lines, and when the block is pressed down onto the cloth, the design is transferred in the same manner as a rubber stamp transfers a signature to paper.

SCREEN OR STENCIL PRINTING: The negative (reverse) of a design is painted with a dye-resisting substance on a sheer silk cloth fastened within a square wooden frame; this forms the screen, or stencil. The screen is placed face down over the fabric to be printed, and dye is forced through the tiny openings in the screen and onto the fabric by the to-and-from motion of a squeegee. When the screen is lifted the desired design has been printed on the fabric surface.

PHOTO PRINTING: The prepared fabric is printed in a manner similar to that by which a photograph is printed on prepared paper. A relatively new method, it is still confined to isolated small runs.

SPRAY PRINTING: The color is applied to the fabric with or without a stencil by a method similar to ordinary spray painting of furniture and cars.

* * *

The foregoing methods, while important for certain types of work, represent a small portion of the total fabric printing done in this country. By far the greater portion of all fabric design printing is done by the roller-printing process.

ROLLER PRINTING: This process combines the developments of engraving and color printing of the type you see in colored advertisements in any magazine, with modifications and developments necessitated by the substitution of fabric for paper. In essence, the process calls for transferring the original design onto copper rollers; the rollers are covered with dye, and as the fabric and rollers meet, the design is transferred to the fabric.

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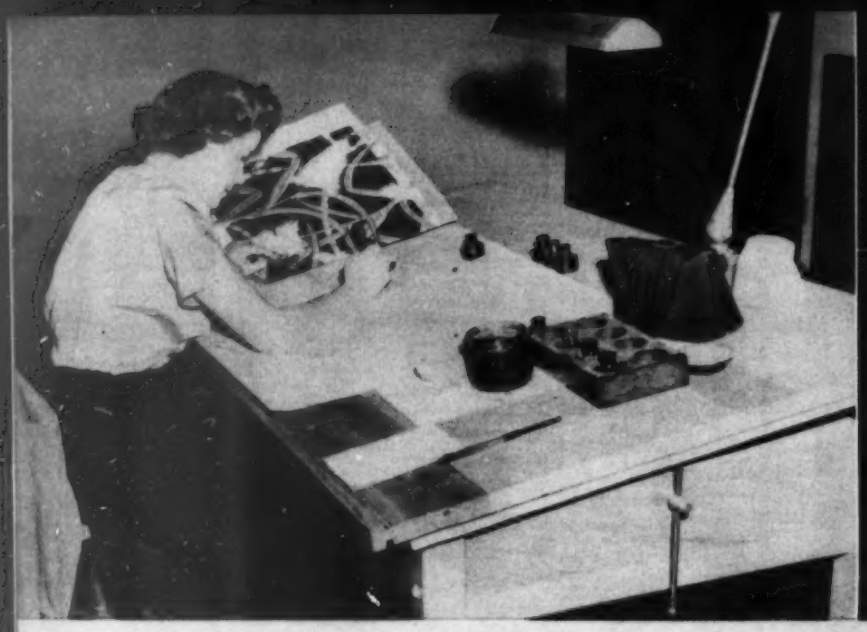
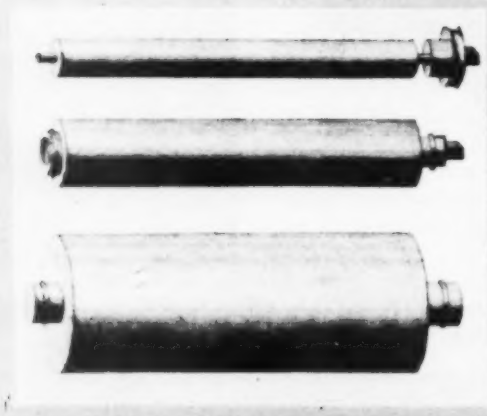


The sketchmaker works up the copy for reproduction

The design is made into a series of repeats



Three 18th Century metal rollers before etching of the design

Dyeing and Printing . . . *continued*

Because the quality of the finished print is dependent upon many separate operations in preparation and execution, the process is here given step by step.

Making the Sketch. The original artist's drawing is made into a *repeat* so that it will be reproduced over and over as the roller strikes the fabric, without loss of continuity.

Photographing the Design. An overhead camera photographs every design element representing a single color onto one sensitized copper plate; each color requires a different plate, and as many as 14 plates may have to be made according to the number of colors to be used.

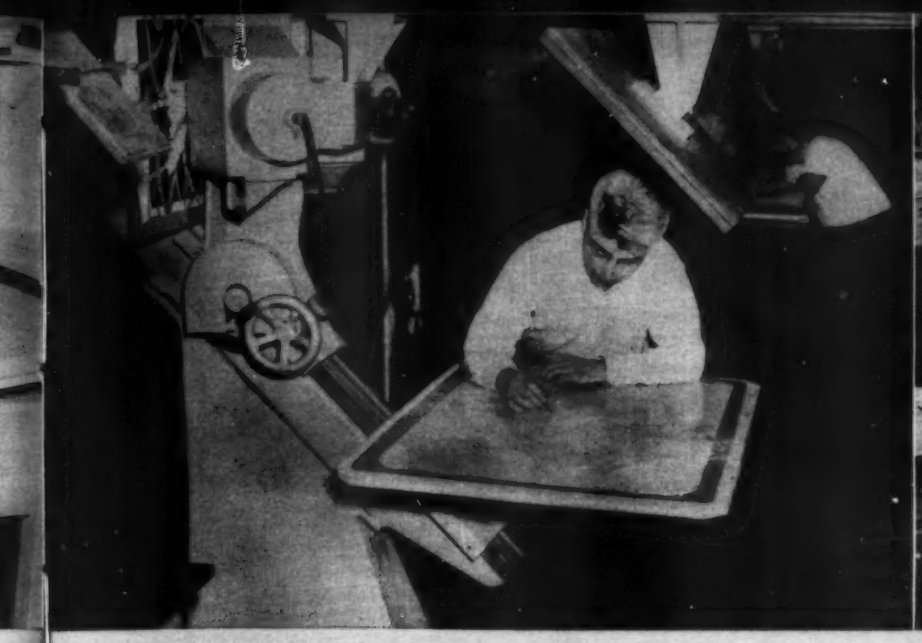
The Plate Is Painted. An artist paints in the pattern from the traced outline of the original color drawing.

Transfer to the Roller. Using a pantograph, the engraver traces the lines of the design which appear on the flat plate, and they are automatically transferred to the curved surface of the roller.

Painting the Roller. A chemical resistant is painted over the color areas of the design on the roller.

A pantograph transfers the lines to a copper roller

The lines are painted with acid-resistant chemicals



The repeat is transferred to a metal plate

The design for each color is engraved on a flat plate

Etching the Roller. Wherever the chemical resistant has been applied, the lines are protected; everywhere else, acid etches away the copper surface and leaves hollow indentations which cannot be reached by the dye when the roller is locked into the printing machine.

Hand Engraving. Using a needle-sharp awl, the engraver tools out tiny flecks of copper which might mar the perfect lines of the design.

Finishing the Roller. The entire surface is polished to a uniform smoothness removing microscopic bumps, so that the dye will spread evenly on all protruding areas and lines.

* * *

The individual copper roller may have a circumference of anywhere from 14 to 36 inches, and a length of from 46 to 60 inches. It is hollow, and steel mandrils are pressed into the hollow to hold each roller in position accurately and to turn it at the right speed.

When the roller is locked into the printing machine, a set of

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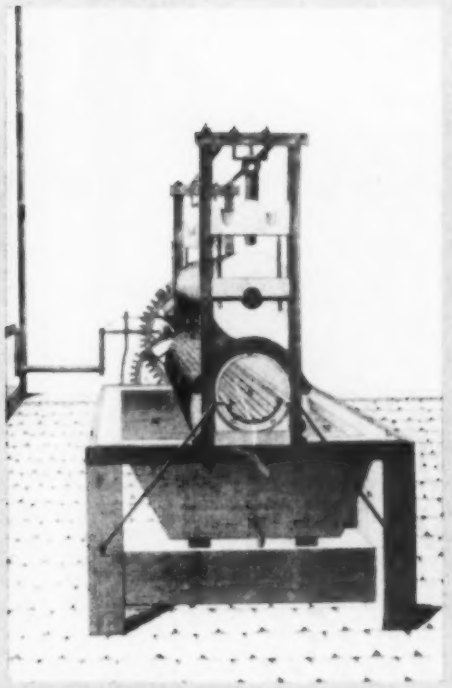
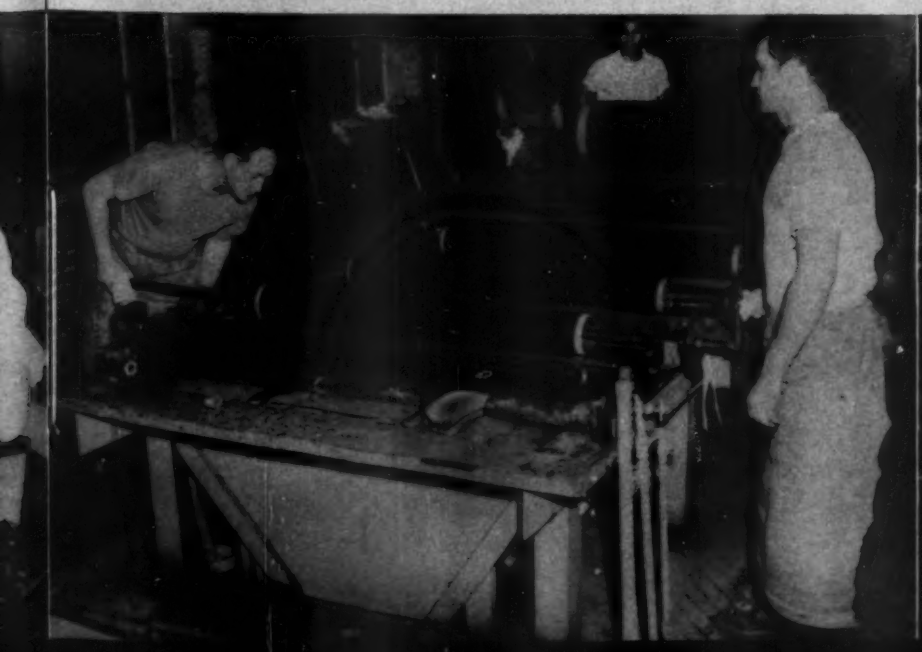


An 18th Century printing machine with etched roller in position

Acid eats into the copper and forms the printing surface



The roller is polished smooth to take dye evenly

turnscrews is adjusted to obtain the precise pressure necessary between the surface of the roller and the cloth as they make contact. Each roller, which imprints one portion of the complete design in one color, is inked from a color-trough (or color-pan) and, as it spins around, a doctor-knife continually scrapes away any excess dye.

Behind the cloth which is to be printed there is a cotton- or paper-back grey cloth which absorbs excess color; and a rubber or felt blanket, as well as a linen-and-wool lapping cloth, are used as a cushion so that fabric and roller meet with steady pressure.

Actual Printing of the Fabric. The cloth passes in turn between the various rollers (each of which deposits a single color impression) and comes out at the end with the completed print pattern clearly transferred. How clearly and sharply this is done depends entirely on the care and skill with which all the preparatory work has been done, and on the quality of the actual printing. If the printing at this point satisfies the supervisor, the fabric is ready to go into the next stage . . . FINISHING.

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What Discharge Printing Means and How it is Done

Very often you handle a printed fabric which includes portions of white in the ground or in the pattern. In cases where the predominant note in the design is white, and the ground is obviously planned to be white, the printer uses bleached white goods and then imprints all of the decorative colors on top of it.

However, where the ground is colored, and the white section represents only a decorative note, then the white effect is achieved by the process known as discharge printing (or extract printing). The cloth is first dyed with certain dyestuffs which can be removed or destroyed by hydrosulphites and live steam; then it is printed with a paste which contains sodium formaldehyde sulfoxalate. When the fabric has been dried, it passes through a steam box (or ager) where a reducing agent removes the ground shade wherever it has been covered with the paste . . . and leaves instead a clear white area which is the white design you see on the finished fabric. In other words, through this chemical action, the color is *discharged from* the cloth rather than applied to it.

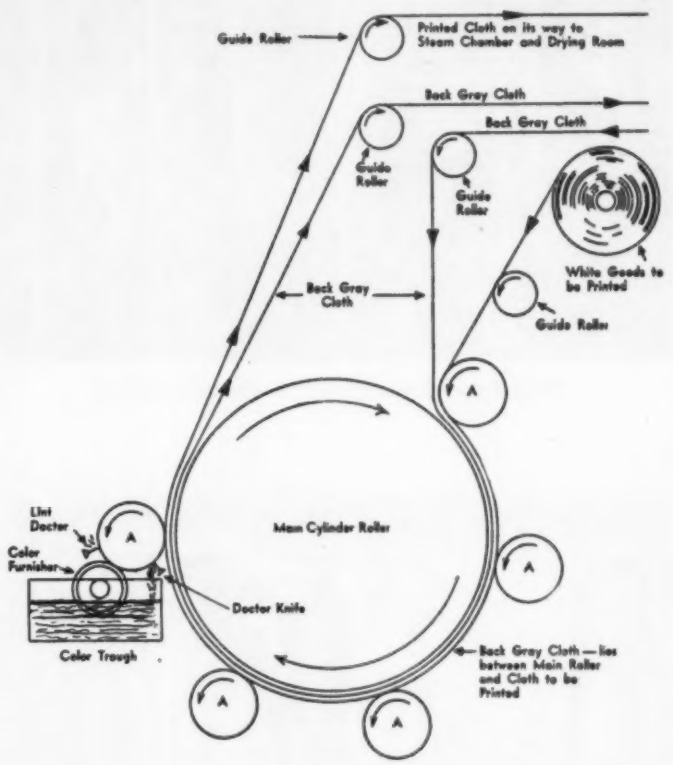
What is Meant by Resist Printing

The most common example of this type of fabric printing is a white design on a black background. Instead of applying the black portions of the design in the areas which are to take color, the process does just the reverse; a color paste is applied where the white (or any other contrast color) is to appear, and the paste *resists* the black dye which is being spread by the roller. When the fabric is later finished, the paste disappears and leaves the undyed area which forms the white design.

(opposite page)

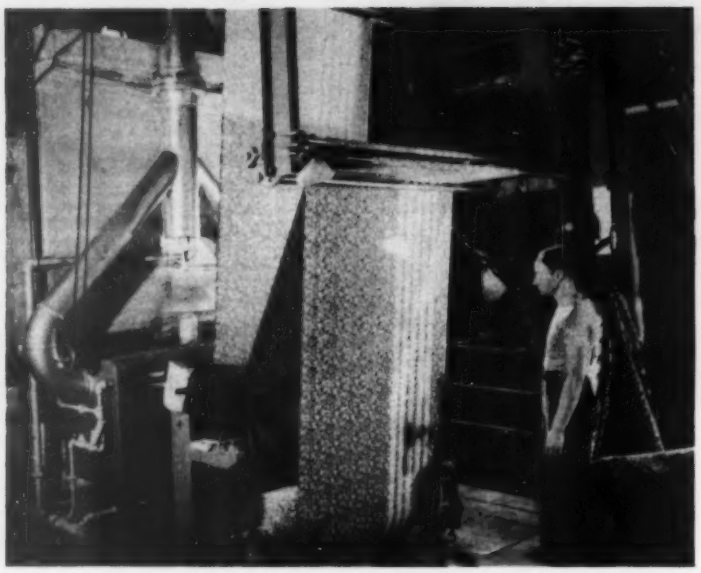
As many as fourteen different colors can be applied simultaneously as the cloth goes through the printing machine. Despite the speed at which it travels, the cloth does not become smeared or blurry.

Side View of Printing Machine, Showing the Progress of Cloth through Rollers

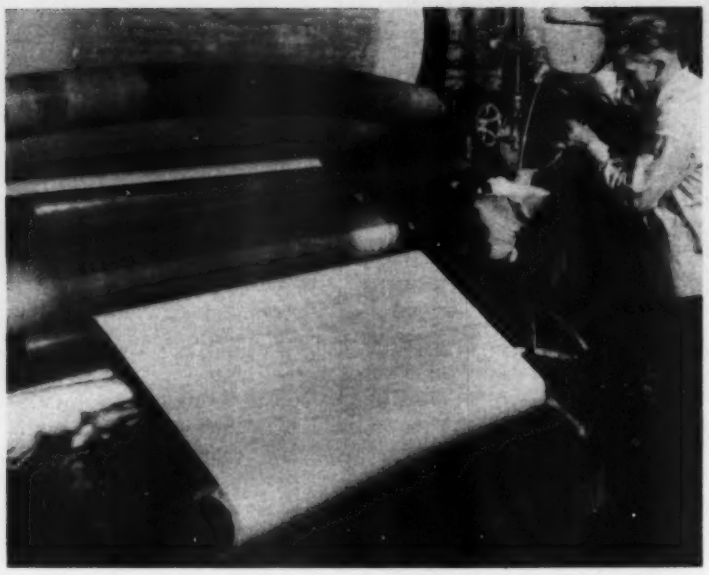


A. The etched copper print rollers which make printing possible. There must be a roller for each color used in the pattern.

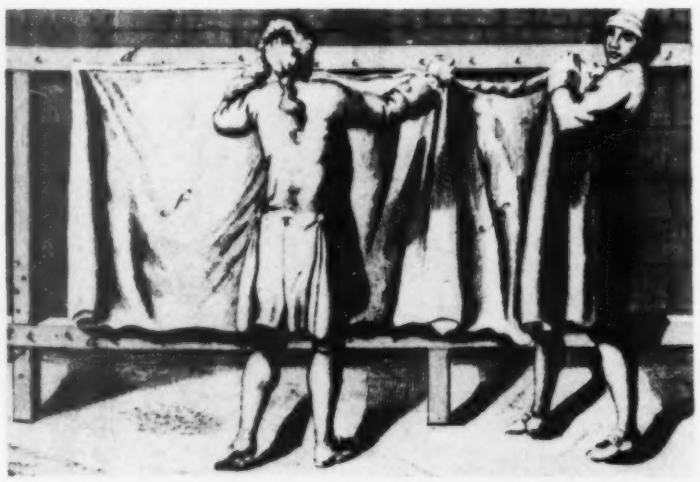
As the cloth and the roller meet, the dye is transferred to the cloth by direct printing. Each roller imprints another color dye.



The printed cloth is aged, to set the colors firmly



A finishing liquid is applied to attain the desired hand



Tenter frame with hooks has today become the machine below.

Stage IV

FINISHING THE FABRIC

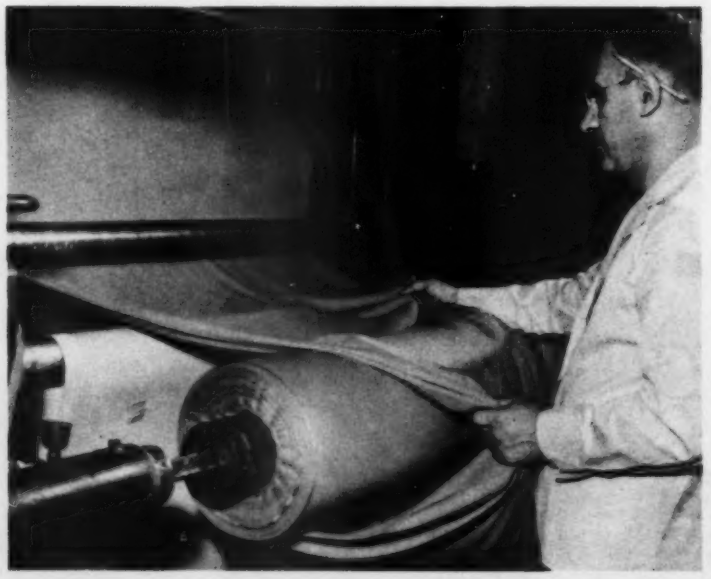
Whether the fabric has come directly from the dyeing room, or whether it has passed through the additional processes required to print a pattern on the surface, it now enters the finishing stage where several important treatments are undergone. One purpose is to set firmly the colors which have been applied to the cloth; another is to add certain qualities of hand and drape which are desirable. The major steps in finishing follow.

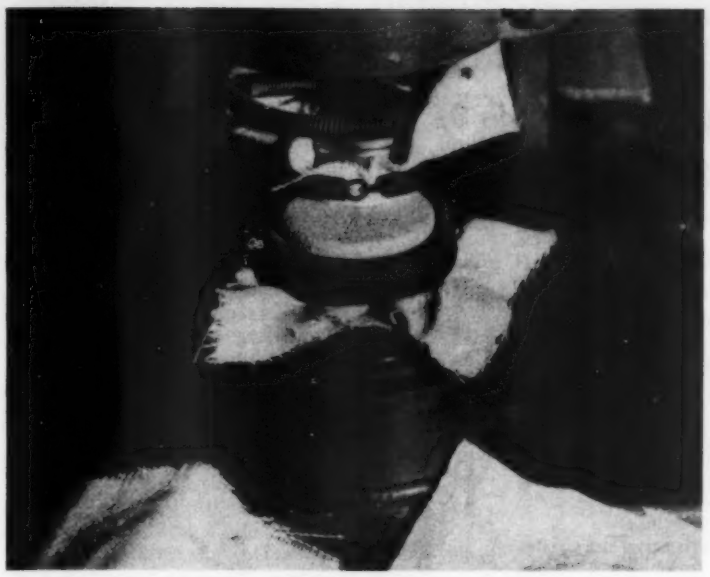
AGING THE PRINTED CLOTH: When all of the colors have been printed on the fabric, it goes through a steam-heated machine which firmly sets the colors to prevent running or fading.

WASHING THE FABRIC: In this process any excess compounds left on the surface are neutralized and scoured off to leave a uniformly smooth effect.

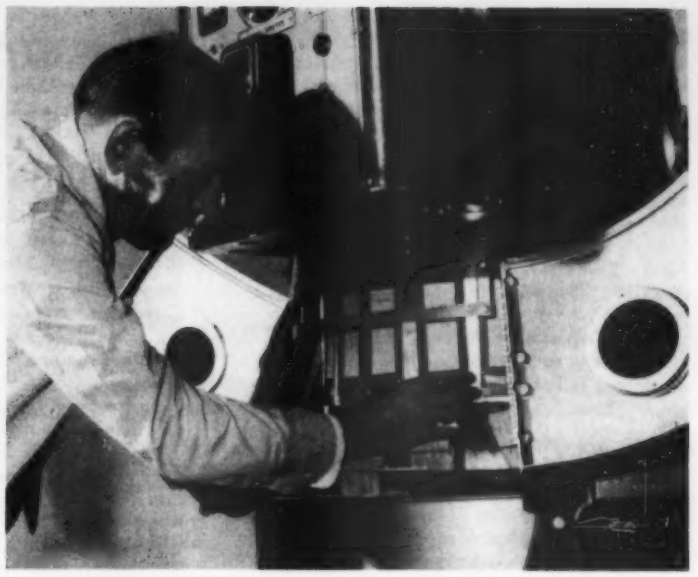
The fabric is again dried and tentered to uniform width

The fabric surface is calendered to the required effect





The abrasion machine reveals the wearing quality



In the fade-o-meter, color fastness is determined

DRYING AND TENTERING TO THE RIGHT WIDTH: Again the fabric is run through the tentering machine, in order to bring the width evenly to the desired measurement.

CALENDERING: Now the fabric goes through its last treatment; it is run through a set of rollers which provide the glaze, sheen or luster which is specified.

Stage V

TESTING THE FABRIC

Before the finished fabric is permitted to leave the plant, experts put the cloth through rigid tests to determine whether it conforms precisely with the standards required. These standards are to judge the whole finishing process and the qualities imparted to the fabric during the various steps, from the standpoint of performance in use. The reason why customer complaints are rare when goods are well finished is that not only was the fabric well processed during its passage through the plant, but it proved its quality by coming through all the tests successfully.

Following are some of the standard tests applied:

WEARABILITY TEST: To be sure that the fabric has not been damaged during the previous processes, samples are tested with a machine to determine strength.

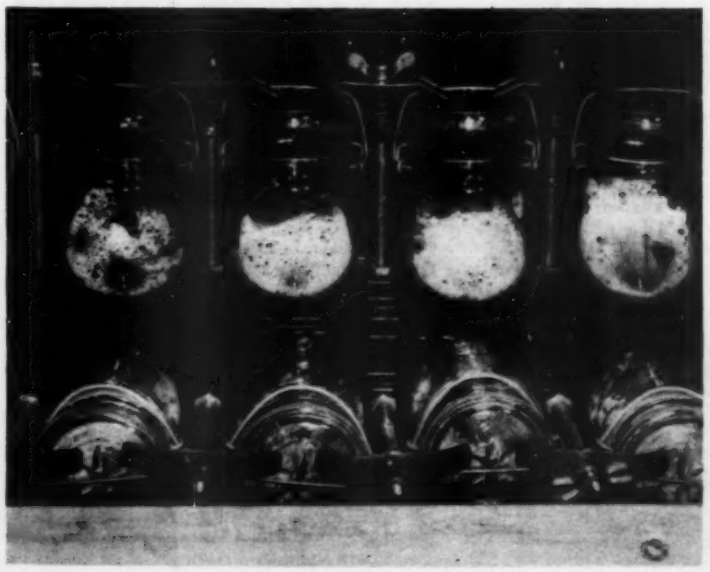
UNDER THE FADEOMETER: Will the colors stand up under strong sunlight? A sample swatch is subjected to intense light to determine how much sun it can stand.

WASHABILITY TEST: If the fabric is to be sold as washable, sample swatches are subjected to conditions more rigorous than normal laundering.

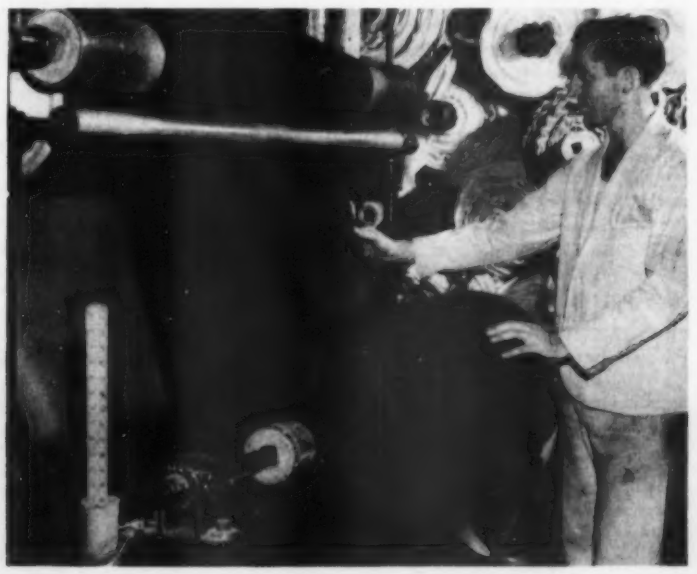
EXAMINING THE GOODS: Every yard of goods is critically examined by eye and hand to be sure that the texture is even, and that the dyeing and printing are clear.

(please turn the page)

Swatches are laundered under normal washing conditions



Final examination of each piece, inch by inch



A Glossary of Terms

most commonly used in the processes of

DYEING • PRINTING • FINISHING

AFFINITY: The attraction between fiber and dyestuff. If the dye takes readily, it is said to have good affinity for the fiber. Some dyes do not take very well on certain fibers and they are classed as having no affinity for these particular fibers.

APPLICATION PRINTING: The printing onto white goods irrespective of the type of material involved; a term rather popular in printing of rayons and silks. There is no discharge or resist printing procedure involved in application printing, which is sometimes also known as *direct* printing.

BASIC DYES: They are formed by the combination of a chloride or a sulphate with an organic color base. These coal tar dyes can be used in alcohol, candles, fats, lacquers and oil to produce light or dark shades of color. They will color silk and wool directly in a slightly acid bath. On vegetable fibers the basic dyes require a tannic acid mordant to provide chemical affinity to produce an insoluble color base.

CALENDERING: A mechanical method using rollers to provide glaze, glossiness, hardness, luster, sheen, and even embossed designs to textile materials. Calendering is usually done to afford a special finish to fabrics.

CAUSTIC SODA: Formula is Na OH. It is a white, crystalline solid readily soluble in water. It is used in mercerizing cotton, printing of indigo, vat dyeing and soap manufacture and is an important chemical in the making of man-made filaments. Caustic soda will destroy animal fibers such as wool or silk; it has little effect on vegetable matter like cotton or flax.

COLOR FASTNESS: The determination as to whether a color is fast in a number of standard tests used for the purpose. Yarn or fabric may be tested for fastness to color fading, spotting or staining. Some of the tests employed include fastness to crocking, color bleeding, dry cleaning, laundering, sunlight, perspiration, ironing.

COLOR LAKE: The insoluble combination of a mordant and a dyestuff that has been fixed on the fiber, such as tannin with basic dyes on cotton, or chromè with a mordant on wool.

COLOR ROLLER: Used in cylinder or direct printing, it is usually a copper roller about 15 inches to 36 inches in circumference. This roller is fitted onto a steel mandril in the printing machine; its purpose is to transfer a particular color to the material, and that portion of the color motif or pattern is engraved or etched on its surface.

COTTAGE STEAMER: A type of sealed cylindrical chamber wherein print colors are fixed on the material by the action of live steam, either at atmospheric pressure or up to 10 pounds gauge pressure.

CREASE RESISTANCE: The property of a fabric which enables it to resist wrinkling or mussing. Durable treatment for crease resistance causes wrinkles to come out either immediately or after hanging for a short time.

CROSS DYED CLOTH: Various animal fiber cloths that have some vegetable fibers in them are cross dyed. A cloth may have a cotton warp and a worsted filling. The cotton yarn is dyed prior to weaving and the animal fiber yarn (worsted) requires a dyestuff of chemical composition different from the cotton. The cloth as it comes from the loom will show a dyed cotton warp and an undyed worsted filling. The cloth is then dyed in a vat and the worsted stock is colored (cross dyed).

Another meaning of cross-dyeing implies the multi-colored effects produced in cloths whose fibers possess varying or different affinities for dyestuff. Much man-made fiber cloth is dyed this way; for example, a viscose warp and an acetate filling fabric would often be cross-dyed to obtain pleasing color effects.

CURING CHAMBER: Any type of drying equipment in which 300 degrees F. and over can be obtained. The chamber may be of the loop, roller or enclosed frame type.

DECATING, DECATIZING: Cottons, rayons and fabrics made with both rayon and cotton in them are wound on a perforated drum equipped with a steaming and vacuum system. The cloth, as it winds, is laid between layers of a decating blanket. Steam is passed through the cloth from the inside to the outside layers, and then the action is reversed. The vacuum pump takes out the steam on completion of the treatment. Decating sets the material, enhances luster and gives some assurance against shrinkage.

DETERGENT OPERATIONS:

1. *Boil-off:* Cottons, rayons or fabrics made with varying combinations of these two fibers must be boiled off to remove natural waxes, motes, pectins and soil and to improve absorbency. The detergent used must have rapid penetration and soil-removing and suspending actions.

   On man-made fibers and filaments, including hosiery, this function of the treatment is to remove spinning oils, sizing compounds and soil. Good detergent action must be present and, in some instances, leveling properties should be of the best.
2. *Continuous Bleach:* On cottons the aim is to remove the natural waxes, motes, pectins and soil, and to improve absorbency. Rapid penetration is necessary.
3. *Desizing:* Cottons and rayons are treated for size removal, and rapid penetration and wetting actions are important properties of the detergent used.

4. *Dyeing:* On cottons and rayons the function of the detergent is to improve penetration and leveling action. The detergent should have stability to acids.
5. *Finishing:* Cottons and rayons should possess a soft, mellow hand when finished. The properties of the detergent used should include low titer and freedom from rancidity. In addition, man-made and synthetic goods should receive a good scrooping property in finishing. High titer and freedom from being rancid should be the chief assets of the detergent used.
6. *Kier, Beck, Vessel Boiling:* In the case of cottons the purpose of the detergent is to remove natural waxes, motes, pectins and soil. Absorbency should also be improved. The detergent used should provide for rapid penetration, soil removal and suspending action.
7. *Soaping:* On dyed cottons, rayons and fabrics made of these two combined fibers, the function of the detergent is to remove excess dye and to aid in bringing the color to the proper shade. On prints, the purpose is to remove all gums and starches, etc. Maximum detergency action is vital.

DEVELOPED DYEING: This is usually done with dyestuffs that are substantive to cotton and rayon wherein further treatment may be applied, such as diazotizing and coupling with phenols, naphthols or amines to increase the fastness to washing.

Naphthol dyeings are usually considered to be those produced from a beta oxy-naphthoic acid derivative combined with a diazotized amine. Para Red is produced from Paranitraniline, diazotized and coupled with beta naphthol.

DIAZOTIZING: Part of a process whereby direct colors are made semi-fast by treating the fabric after dyeing in a solution of sodium nitrite and sulphuric acid; a developer is then added such as naphthol, naphthylamines, carbolic acid or other organic compounds for the desired effect.

Diazotizing may also be classed as an intermediate step in the production of developed naphthol or para dyeing. It is an essential step in the producing of all azo dyestuffs. The diazotized base is combined with a phenol, naphthol or another amine in order to make the complete dyestuff.

DIRECT COLOR: A substantive dyestuff used chiefly on cottons and rayons.

DIRECT DYES: These are applied to goods directly without the use of mordants; also known as commercial dyes. These dyes are applicable to all fibers except acetate rayon; used chiefly, however, on cellulose fibers.

DIRECT PRINTING: Printing of patterns directly onto material from rollers, usually made of copper and engraved to form the pattern on the goods when applied. Cretonne is an example of direct printing. Also known as Calender, Roller and Cylinder Printing.

DURABLE FINISH: One which will retain its characteristics and remain inherent, to a large degree, in the fabric through ordinary household washings, wet cleaning and dry cleaning for the life of the goods.

DYESTUFF: The name given to materials, solutions, or matters that color textiles. Prior to 1850, most of the dyestuffs used were animal or vegetable matter, but with the scientific progress of today many noteworthy inventions and discoveries have been introduced in the field of textile coloring. Rapid strides in dyeing have been made chiefly in Germany, France, England, Italy and this country.

Dyestuffs may be classed according to their origin . . . animal, vegetable, mineral, synthetic. The chief animal dyestuff is cochineal which is obtained from a dried insect. This dyestuff or coloring matter is much used to color Oriental rugs in Persia, Turkey and other centers. Cochineal may be compared with the famous shellac bug, mica.

There are many vegetable coloring matters, such as logwood (used to obtain good black on silks), madder root, quercitron, fustic, sumac and indigo.

Many dyestuffs today are made chemically from coal-tar preparations, the so-called artificial or synthetic group. Some of the major dyes today include acid, basic, direct or substantive, vat, sulphur, indigo and mordant.

EXTRACT PRINTING: On goods that have been previously dyed, certain portions of the original color are removed by chemicals. Another name for Discharge Printing.

FUGITIVITY: The lack of fastness of dyestuffs to one or more of the various color destroying agents such as sunlight, washing, perspiration, crocking, etc.

GREY GOODS: Also known as greige. They are cloths, irrespective of color, that have been woven on a loom, but have received no dry or wet finishing operations. Grey goods are taken to the perch for the chalk-marking of all defects, no matter how small. These blemishes must be remedied in finishing of the cloth. Material is converted from the grey goods condition to the finished state.

Dry finishing operations may include perching, measuring, burling, specking, mending, sewing, experienced sewing; shearing, mapping, gigging, pressing, packing, wrapping.

Wet finishing operations may include dyeing, printing, washing, fulling, milling, scouring, soaping, shrinking, crabbing, tentering, sponging, decating, London shrinking, waterproofing, gassing or singeing, bleaching.

HAND, HANDLE: The reaction of the sense of touch when fabrics are held in the hand. There are many factors which give character or individuality to a material observed through handling. A correct judgment may thus be made concerning its capabilities in content, working properties, drapability, feel, elasticity, fineness and softness, launderability, etc.

The term was originally applied to silk filaments, but the importance of a good handle to textiles has caused the term to take on more importance in other phases of the industry.

HYDROSULPHITE: Basically it is a salt of hydrosulphorous acid. Sodium hydrosulphite, for example, is used in the dyeing and printing of textiles as a strong reducing and bleaching agent.

J-BOX: A device used in many wet finishing operations to make the cloth processing more or less continuous. The name comes from the fact that the box is made in the form of the letter J. The material is fed into the box at the top and it plaits down to fill up the longer arm of the box before the cloth is pulled out of the shorter arm or opening. Timing is an important factor in operating the box.

JIG: This machine is used to dye piece goods. Full width material is passed from a roller through the dye bath in an open vat and then proceeds to another roller. The treatment is repeated a sufficient number of times until the desired shade is assured.

MELAMINE: A chemical compound used in the manufacture of melamine resins.

MELAMINE RESINS: Made by reacting melamine with formaldehyde; the resulting product and some of its derivatives may be used for textile finishes to give shrinkage control, wrinkle resistance, crispness, soil resistance.

MORDANT: Any substance which, by combining with a dyestuff to form an insoluble compound or lake, serves to produce a fixed color in a textile fiber, leather, etc. Most mordants are metallic salts, although some are acidic in nature, such as tannic acid.

The formation of a mordant, for example, could be as follows: Tannic acid is soluble in water; tartar emetic is also soluble in water; however, they combine to form an insoluble mordant.

OXIDIZED COLOR: A dyestuff that is developed to its full strength by the application of chemicals which oxidize it.

PAD DYEING: The application of dyestuff to fabric by means of the padding machine which is equipped with two ringer rollers that force the dyestuff into the goods. The padded cloth is rinsed in an open washer machine and then dried. Since only one application is necessary, the method is economical for coloring cotton goods for summer wear.

PANTOGRAPH: An apparatus for copying designs to any scale within the capacity of the device. A dummy point traced over the original drawing moves a series of arms to a stylus that reproduces the traced line in larger or smaller scale. The machine is used in the printing industry for transferring the artist's design to the copper printing roller.

PIECE DYEING: The dyeing of cloth rather than raw stock or yarn. It is a continuous or semi-continuous process which takes place in a dye-beck, box or jig or some other form of continuous machine.

The greige cloth is scoured usually in a separate machine and is then loaded on one of the above types of dyeing machines. On jigs and continuous machines the cloth is handled in the open width while on the dye-beck it is in rope form.

Piece dyeing is very popular because of the inherent flexibility of this method from an economic standpoint. It is far more economical to weave fabric with undyed yarns and subsequently to dye the fabric into popular shades than to yarn-dye with the hazard that the colors may not be popular when marketed.

There is also considerable manufacturing waste between yarn-dyeing and the production of the finished goods. Recent techniques have made it possible to piece-dye with the finished result equal in fastness to yarn-dyed or the so-called ingrain dyeing.

REDUCED COLOR: A dyestuff which has its formulation changed or reduced by chemical agents.

RESIN: A solid or semi-solid, high-molecular weight, amorphous organic compound, or mixture of such compounds, with no definite melting point and little tendency to crystallize.

SCUTCHING: Opening up of cloth to its full width. This takes place before the finishing of the material. Very often water is extracted at the same time.

SOFTENER: One of several products on the market used in warp sizing and cloth finishing to impart a soft mellowness to the fabric. Examples of softeners include sulphonated castor or palm oil, glucose, glycerine, paraffin wax, tallow, etc. There are also available the permanent types of cationic softeners which resist removal from the fabric by either dry cleaning or washing.

STARCH: A white, odorless, tasteless substance obtained commercially from grain and potatoes but found in nearly all plants. This carbohydrate has the chemical formula of $C_6H_{10}O_5$.

TENTER FRAME: A machine that dries and stretches cloth to its finished width, and straightens its weave by the action of two diverging endless chains. Each chain is equipped with a series of clips that hold an edge of the cloth and convey it over gas flames or through a hot air drying compartment.

THERMOPLASTIC RESIN: A synthetic resin which can undergo a number of heating cycles and still remain soluble and fusible. This type of resin usually softens with heat and stiffens when chilled.

UNION DYEING: A one-bath process as a result of which the same color can be imparted to two different textile fibers or filaments.

VAT DYED: Any material that has been dyed with *Vat Dyes*. These dyes are insoluble in water and must first be rendered soluble in water by conversion to the alkaline reduced form. After the goods have been removed from the dye vat, this colorless base is oxidized by the air to an insoluble color in the material.

(please turn the page)

How a piece of cloth looks at each stage

THE GREY GOODS — As it comes out of the bale, before it has been embossed or singed preparatory to dyeing the ground.

THE BLEACHED GOODS — How the fabric looks after boiling off and bleaching before the first step in applying color.

WITH DYED GROUND — With the basic color already dyed into the cloth, it is now ready for the final processes of printing the pattern.

DISCHARGE PRINT — The ground color has been taken out by the action of the discharge chemicals, producing the white pattern.

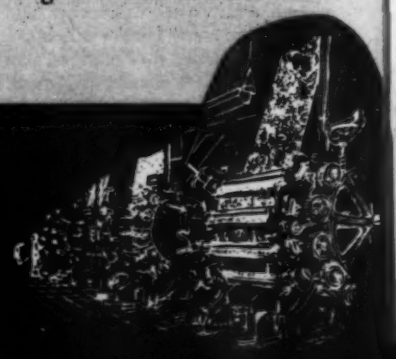
THE FIRST COLOR — The fabric has passed the first roller giving a yellow imprint in addition to the discharged white pattern.

THE SECOND COLOR — The green is added. The print now has grey background, yellow and green prints and white discharge pattern.

THE THIRD COLOR — With the addition of red the printed fabric now has reached the full color range, but it still lacks dark accents.

THE FOURTH COLOR — The last roller prints the sepia brown tones which hold the pattern together and give it final contrast and brilliance.

The Editors of AMERICAN FABRICS acknowledge with deep appreciation the excellent cooperation furnished by Sanco Piece Dye Works, Inc. in the preparation of this article. Their unstinted aid in supplying information and the use of their plant for photographic illustration of the newest processes and equipment contributed greatly to building the story *How Rayon Fabrics Are Dyed and Printed.*



Flannel type twill with typical worsted hand...Orlon with wool by MILLIKEN

THE ACRYLIC FIBERS PROVE THEIR VERSATILITY

As spinners, knitters and weavers gain greater experience with Orlon, they discover new ways to attain appealing fabrics

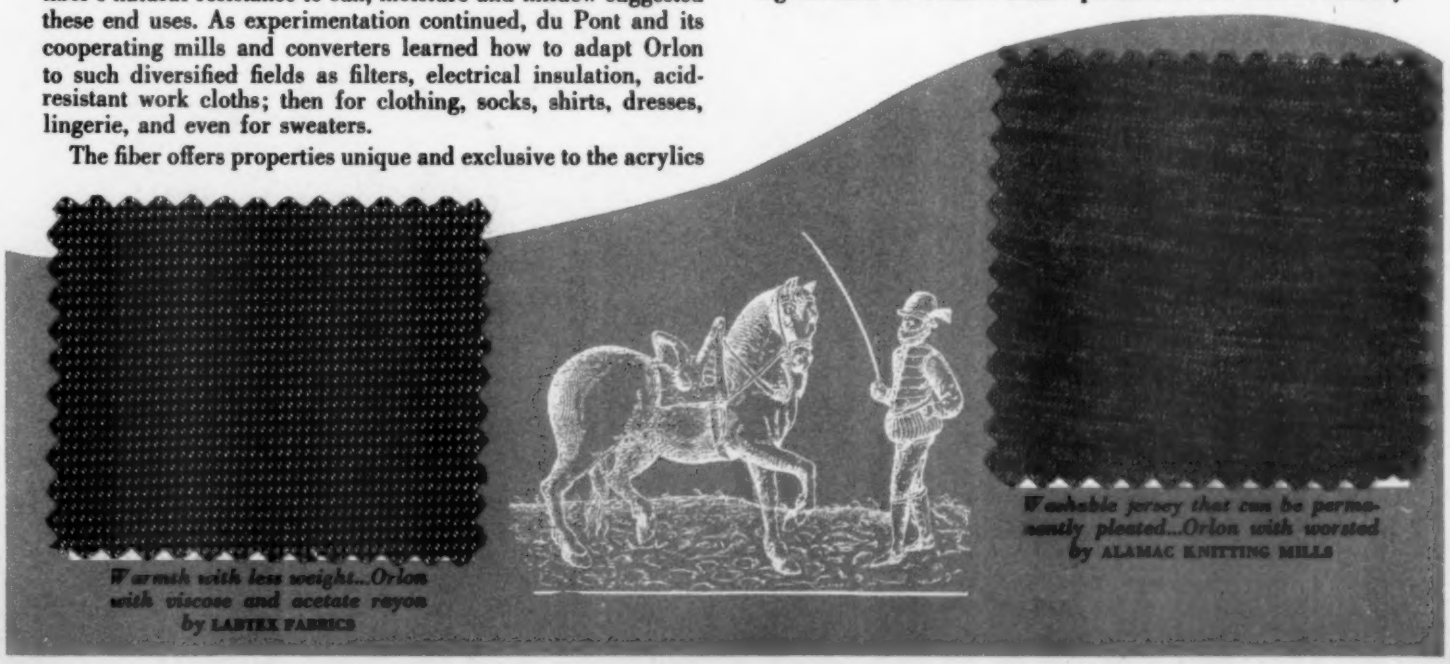
IN THE SPHERE OF continuous filament acrylic fibers Orlon, manufactured by du Pont, is not only the oldest in point of actual commercial production, but by the same virtue it has enabled textile companies to do the greatest amount of experimentation and development. It began as a pre-engineered fiber, the result of much research aimed at the objective of producing a filament with specific properties. Like all du Pont products Orlon had to prove itself through infinitely trying tests before it was made available to the public.

* * *

At the outset Orlon was used in such fabrics as awning materials, outdoor furniture coverings, curtains and auto tops; the fiber's natural resistance to sun, moisture and mildew suggested these end uses. As experimentation continued, du Pont and its cooperating mills and converters learned how to adapt Orlon to such diversified fields as filters, electrical insulation, acid-resistant work cloths; then for clothing, socks, shirts, dresses, lingerie, and even for sweaters.

The fiber offers properties unique and exclusive to the acrylics . . . it is light in weight, yet offers great bulk and covering power; it is easy to dry-clean and press, fast to dry; the eye perceives a luxurious luster; the hand responds to a warm, friendly feeling. It can be, and is presently, used to make unusually appealing fabrics of many types both woven and knitted, alone and in blends with other fibers.

As du Pont expands its production facilities, greater quantities of Orlon will be made commercially available; at the same time, the expansion of the number of mills working with this fiber will bring forth many new fabrics of even broader appeal. This is indicated by what is already available, as exemplified by the swatches presented on this page . . . an encouraging forecast of Orlon's future position in the textile industry.



Warmth with less weight...Orlon with viscose and acetate rayon by LADTEX FABRICS

Washable jersey that can be permanently pleated...Orlon with worsted by ALAMAC KNITTING MILLS

The Editors of American Fabrics invite you
to be a Charter Subscriber to a New Publication

GENTRY

FOR MEN OF FINER TASTE

May we ask you one straightforward question . . .

Based on the enjoyment and stimulation you've received from AMERICAN FABRICS, *would you risk $8 for a charter subscription to a completely new type of magazine edited for only the top 50,000 men (and their families) in this country?*

The whole story of GENTRY is really as simple as all that. We're producing it because we believe that today there exists, as never before, a reading void which is severely felt by these 50,000 individuals of America. All around them is literally a forest of paper and ink yet, search as they may, in all the forest there is not to be found the one type of magazine which can provide them with inspiration and the key to a fuller life.

By all the common concepts of publishing, GENTRY will be a very unusual magazine. We don't mean only because it will be as finely executed as *American Fabrics* (perhaps even better), or because it will contain a great many luxurious reproductions of fine art, and other tri-dimensional effects. People have the right to expect the unusually fine in the graphic aspects of any magazine published under the sponsorship of *American Fabrics.*

What Will Be in It?

It's in the *kind* of editorial material GENTRY will present, and in the *way* of presentation, that we believe you'll find this new publication so provocative, so inspiring and so enriching. It won't be an apparel magazine, yet we feel that it will be the kind of magazine every man interested in the finer aspect of apparel will welcome because it will help him to a fuller understanding and enjoyment of this important part of living.

GENTRY will deal with all the things that surround and interest people of taste. We believe that GENTRY'S interpretation of these subjects will add just a little more sparkle to your enjoyment of that particular thing, or place, or idea.

* * *

We do promise you this: GENTRY will present material that is quite unusual, and we promise that this material will come to you in a way that is quite out of the ordinary. Perhaps that will be the chief

feature of our publication. It will deal with the finer things that go to make up this life all about us and it will deal with these on a higher level and in a quite different manner from that to which we are ordinarily accustomed. In short, GENTRY will be a magazine for people who just aren't satisfied with mediocrity in any sphere.

We chose to make GENTRY a quarterly because we do not believe that it would be possible to produce a publication of this type more than four times a year. GENTRY will not be built for cursory reading or thumbing. Rather than being quickly read and digested, it is conceived to be read and studied *in depth;* to be enjoyed in quiet, in leisure, in one's best moments.

A Limit to Advertising

Because we believe the type of advertising that goes into a magazine is important, perhaps a few words on this subject are in order. To begin with, the number of pages allotted to advertising in our field is definitely limited. These pages have practically all been contracted for by the firms making the finest products. This must necessarily be so because the element of *belongability* must be considered. Many makers of good *average* products do not belong in a magazine of this unusual nature. Throughout its tenure, the advertising which is scheduled to appear in GENTRY will represent the finest products of the world's finest firms.

* * *

This is the story of GENTRY. We believe it fitting that this, the first public announcement, should be made to you . . . the readers of *American Fabrics* . . . because you comprise not only the top level of people in the fields of retailing, manufacturing and textiles, but because the fact that you subscribe to this type of publication indicates that you are willing to buy the finest that is available in reading matter as in everything else.

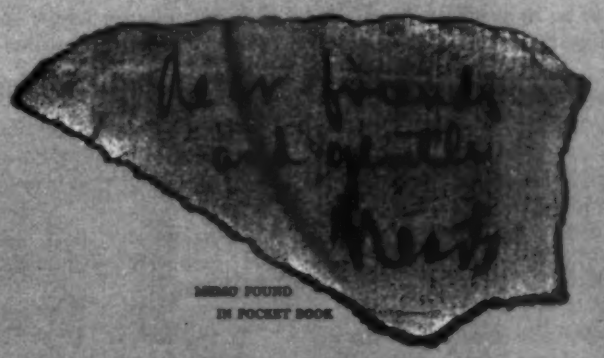
Will You Accept This Offer?

We therefore ask you, since you know that as publishers we have both the technical knowledge and imaginative quality needed to produce a magazine along the lines we promise, to accept our offer to become a Charter Subscriber at the special introductory rate of $8 a year. It is understood, of course, that if you find the first issue of GENTRY in any way disappointing, you may cancel your subscription and we will refund your money at once.

Because there will be a great deal of handwork necessary in making up each copy of GENTRY, and because much of the material such as cloth swatches, portfolio inserts and tip-ons must be especially ordered in advance, we should like to have your Charter Subscription as soon as it may be convenient to you to send it. Merely remove the subscription blank from the margin between these pages; fill in your own name and those of any friends or associates for whom you wish to order Charter Subscriptions at the special introductory rate, and mail it to us with your check. Your first copy of GENTRY will reach you during the first week in October; after that, you will receive a new issue each three months.

Please accept our sincere appreciation of your patience, and of the trust you place in us by sending your Charter Subscription to GENTRY.

THE EDITORS OF AMERICAN FABRICS



MEMO FOUND
IN POCKET BOOK

INJECTING COMFORT INTO NYLON

A new chemical process . . . Nylonizing . . . permits permanent moisture absorption without impairing the fiber's natural virtues

FROM THE VERY FIRST day when nylon was introduced to the public in the form of hosiery, the consumer was loud in her praise of the fiber's abrasive and tensile qualities . . . and almost as vociferous in her complaints that nylon felt cold and clammy in cold weather, hot and adhesive in warm weather. When the war ended, and nylon was available in free supply for all types of wearing apparel, the public speedily fastened on its virtues of long wear in sharp contrast to much of the substandard textile quality which prevailed during the long war period.

As the novelty of nylon wore off, both the weavers of nylon and the sellers of nylon merchandise began to catch faint and then mounting murmurs of complaint . . . too cold to the skin in winter, too warm to wear in the summer. There was a sharp decline in the consumption of woven nylon fabrics in all fields of apparel; on the other hand, knitted nylons which permitted the skin to breathe retained a fairly firm hold on the public purse.

Science of Chemistry Provides Answer

In the meantime, the research division of Hans C. Bick, Inc., working under the guidance of vice-president Robert S. Horn Jr., and in cooperation with David Travis of Travis Fabrics, had been assaying the problem of injecting absorption into nylon through a chemical application. They were confronted by a long list of taboos . . . the basic construction of any fabric must not be altered; the abrasive quality of nylon must not be diminished; the tensile strength of the fiber must not be reduced. In brief, whatever process would be developed must build atop nylon's most desirable features.

The answer came, finally, in the process now known as Nylonizing: Type Eight nylon is emulsified and made water-soluble; it is applied to the after-finish of nylon, becomes permanent in the finish bath and set, is bonded to the material during the curing process . . . and will never wash off or wear out for the life of the garment. It can be applied to hosiery and to woven or knitted fabrics.

New Vistas Open

From the viewpoint of the wearer (which makes it of extreme importance to the links in the chain of distribution from the retailer back to the weaver or knitter) the Nylonizing process holds forth great promise not only of rebuilding the popular use of nylon merchandise but of opening new sales vistas. Now the wearer can again buy nylon with full faith in its characteristic durability, plus the assurance that it will be as comfortable next to the skin as silk or cotton . . . and this highly desirable quality stems directly from the absorptive trait which is added by Nylonizing.

Tests Prove Effectiveness

If you will make the simple comparative test suggested on the next page, placing a few drops of water on each of the fabric swatches, your eye will quickly reveal the speed and facility with which a Nylonized cloth absorbs moisture, whereas the unprocessed cloth strongly sets up surface tension which resists absorption for several minutes. This is the physical, or chemical, interpretation of what happens; but in the layman's language it means that body perspiration is absorbed by a Nylonized garment instantly, instead of remaining on the skin, and this is why the new Nylonized fabrics feel more comfortable to the wearer. The manufacturers of Jantzen girdles and brassieres, for example, have already learned through actual wear tests that women are extremely enthusiastic over Nylonized garments; and certainly nothing is closer to the skin than these items of intimate apparel.

One of the most interesting aspects of the process is the fact that, while the nylon fiber is rendered absorbent, it still retains its fast-drying feature to an extraordinary degree. While different types of nylon cloth react in varying ways, it can be safely stated that as a general rule if an unprocessed nylon garment dries after washing in an hour, a Nylonized garment from the same cloth takes possibly ten minutes longer to dry. This, obviously, preserves for nylon one of its prime appeals for the consumer.

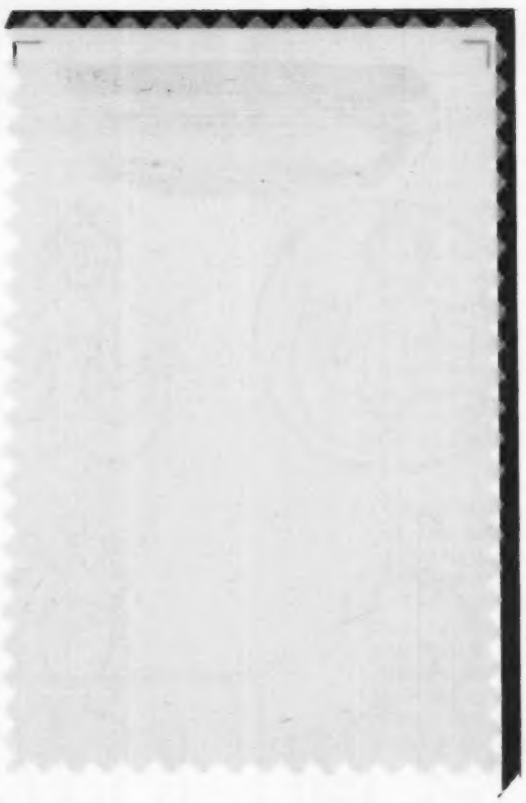
Additional Qualities Through Nylonizing

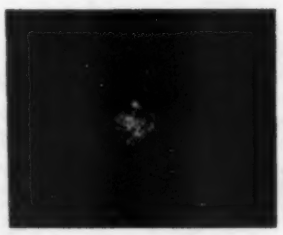
As for the other traits, Nylonizing appears to leave some of them untouched and improve upon others. Some of nylon's brightness is diminished through Nylonizing, leaving a softer and duller effect; the hand of the cloth becomes softer; there is greater warmth to the surface feel; colors become brighter and fuller when applied to Nylonized cloth.

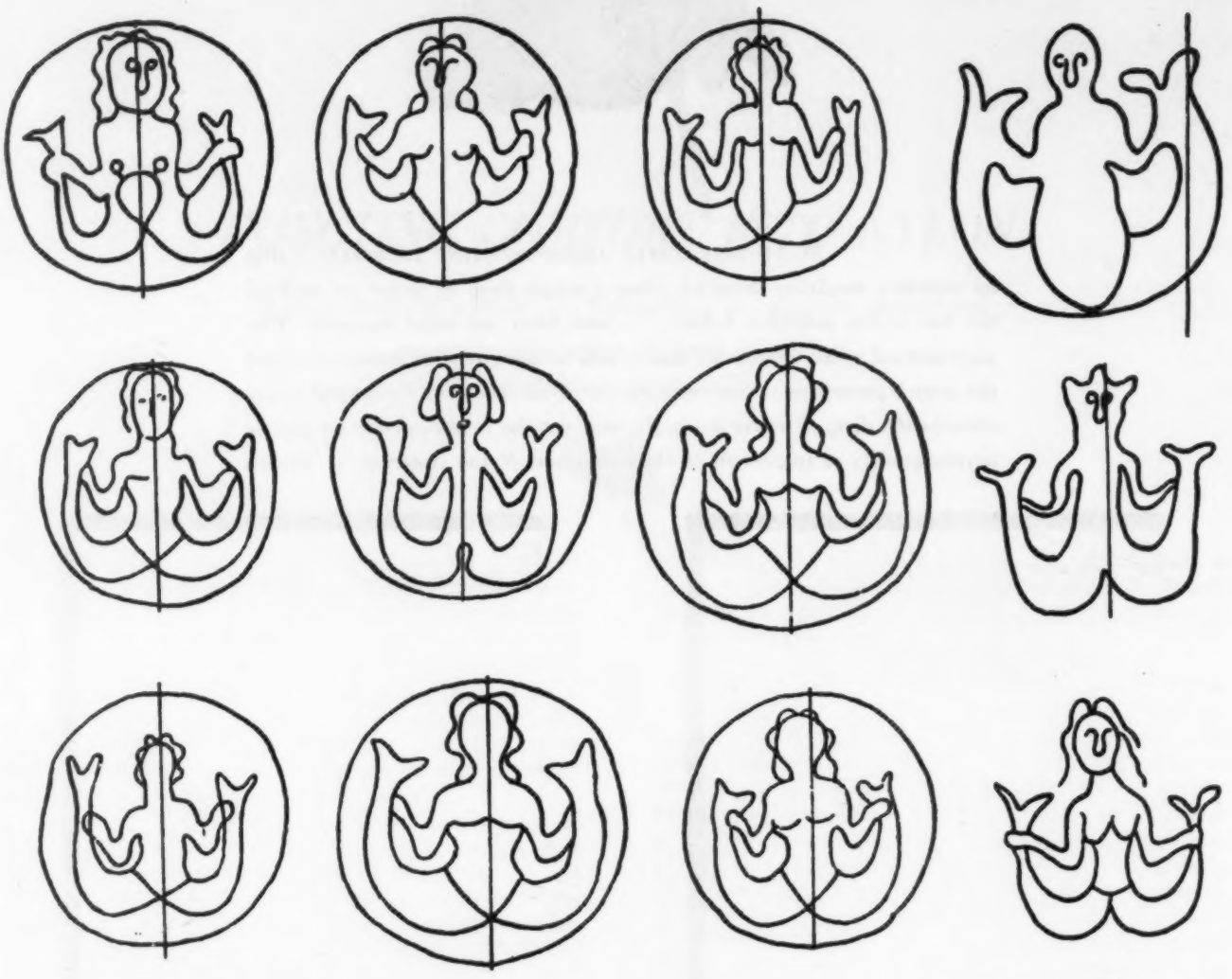
* * *

At the present, Hans C. Bick is prepared to give unconditional assurances for the permanent performance of Nylonizing when it comes to hosiery and woven or knitted nylon fabrics; the next development is in the direction of applying the process to fibers other than nylon, and indications are already evident that the textile industry may soon gain the benefits of Nylonizing in many new fields.

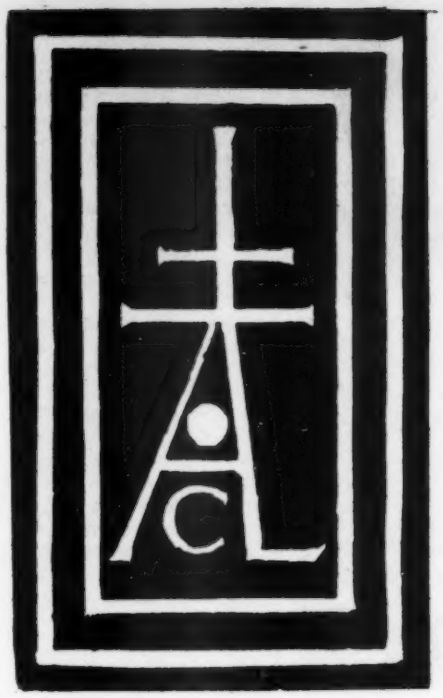
MAKE THIS SIMPLE ABSORPTION-TEST YOURSELF: *Using an ordinary medicine dropper, place a single drop of water on each of the two nylon swatches below . . . and then see what happens. The unprocessed nylon resists the water, and it takes several minutes before the drop is permitted to penetrate the fabric surface. The Nylonized nylon absorbs the drop of water instantly, and yet the fabric retains its quick-drying quality so important to the consumer. Nylon swatches by* TRAVIS.







Drawings show Siren watermark much used in eastern France in the 15th Century. The sculptured Siren motif is an 11th Century Romanesque capital in St. Die Cathedral in the same district in France. This is an interesting example of the transference of a motif from religious to commercial art.



The following material has been compiled and prepared by Bernard Rudofsky, architect, industrial designer and editor. Mr. Rudofsky has written these notes as part of a book on the history of trademark design which will be published shortly by Paul Theobald. Throughout the centuries the trademark has depicted the devices of craftsmen to perpetuate the products of mankind; and, in addition to contributing a wealth of design, it has served as dependable source material on economic and sociological conditions. — THE EDITORS

HISTORICAL NOTES on the SUBJECT of EARLY TRADEMARKS

THE AMERICAN ENCYCLOPEDIA defines a trademark as *a mark or sign indicating the source of origin of the article to which it is affixed.* This is indeed a most elastic definition and plainly includes all the distinguished ancestors of the modern trademark, the seals and signets and signatures; the cryptic, hieroglyphic and symbolic marks of secular and ecclesiastical usage; the devices of craftsmen and the crests of nobility.

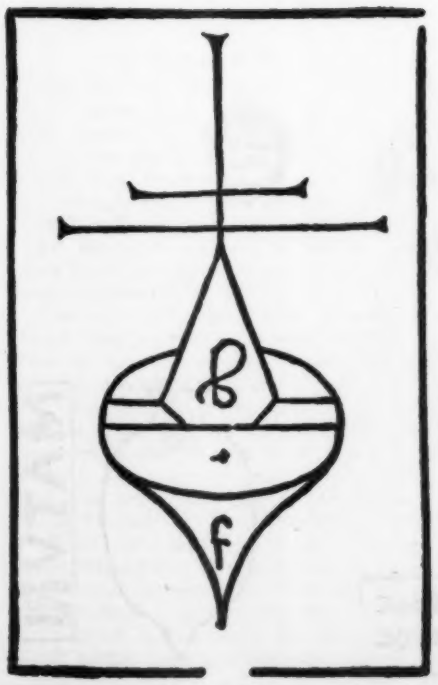
It seems that man's desire to mark his goods and chattels transcends all social systems. Whether his desire be motivated by foresight or greed, by justified or unjustified pride, at no time is he completely indifferent towards the personal product or property. But rather than ascribe his mania of marking the objects he creates, or which pass through his hands, to evil passions, we should try to discern in it a deep-rooted desire to perpetuate his own memory, a striving towards immortality. And, as for that matter, it is quite immaterial whether he is an artist or a manufacturer, a wealthy or a poor man.

Surprisingly little has been written about the trademarks of old. Any good-sized library may contain a bewildering number of books on the legal aspects of modern trademarks; monographs on contemporary graphic artists who more or less specialized in trademark design; probably a good many handbooks for collectors of china, pewter and silverware, complete with lists of marks; a generous amount of literature on water marks, printers', bookbinders' and book marks.

The Trademark as Historical Source Material

Some of the meager notes presented here were culled from books and pamphlets which seem far from being related to trademarks . . . such as Runic and masonic literature, criminological studies on medieval thieves' cant or, on the secret police system under absolutist regimes, minutes of the meetings of philosophical-philological societies, and so on.

Two thousand years ago the use of trademarks to designate the origin of a product and the name of the artisan or factory was already well established. Marking of mass-manufactured objects goes far back in time. Mesopotamian and Egyptian bricks and roof-tiles bore stamps in relief indicating for which construction they were destined. Sometimes these stamps also mention the building site and have aided us in establishing the locality of monuments or towns which disappeared long ago. Egyptian brick marks have helped to unravel the genealogy of the dynasties. In all instances, the humble trademark turned out to be a most dependable guide.



Ancient Trademarks Gave Elaborate Pedigrees

Still more elaborate are the trademarks found on Roman terracotta tiles and bricks. Whereas a modern brick might proclaim, for example, in letters as big as its format permits, merely the county where it was burnt, some Roman bricks inform us in short hand of the manufacturer's or owner's name, of the factory where it was burned and, sometimes, even of the estate where the clay was found, a pedigree as exhaustive as that of a treasured French vintage wine. Sometimes the name of the building contractor is also mentioned, and the most complete trademarks bear the name of the consul, the emperor or a member of the imperial family. We thus learn that part of the income of the Roman aristocracy was derived from the manufacture of building materials. Another interesting piece of information is gathered from the prevalence of female names on Roman trademarks indicating that female business ownership is not at all a prerogative of modern women. Archaeological experience also teaches that almost every discovery of bricks that bear imperial marks brings with it the reasonable assurance that it has come upon a public building or a monumental construction, the excavation of which might yield precious fragments of marble statues, bronzes or mosaics.

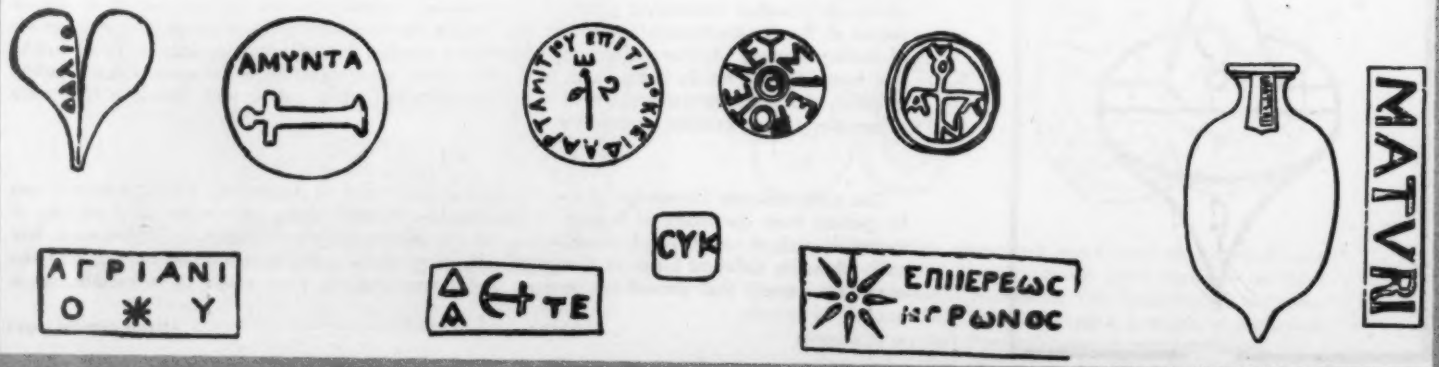
* * * * *

The most intimate knowledge of socio-economic conditions in the ancient world, however, can be gained from the study of household implements. These articles were made of a variety of materials such as metal, wood, stone and glass, but the great bulk consisted of earthenware. Not only the many different kinds of household crockery, vases and decorative objects, but also the capacious vessels that served for storage and transportation, were made of terracotta. Most

(*please turn the page*)

Potters' stamps from excavations at Gezer, said to be more than 6000 years old

Typical marks, Manufacture Nationale de Porcelaine de Sèvres



Marks on Rhodian jar handles from the excavations at Gezer. At right the illustration shows the stamp of the potter's name, Maturi.

Trademarks . . . continued

numerous among them were the amphorae, the all-purpose containers of ancient times. These enormous, two-handled jars, which often reached a height of six feet, were made of coarse, unglazed pottery, and used for shipping and storing water, oil, wine, fruit and cereals. The factory's name and sometimes that of a magistrate were stamped on one of the handles.

Clue to Trade Practices

Another mass-produced article also made by potters was the omnipresent oil lamp, the only common source of illumination for indoors as well as outdoors. Thanks to the archaeologists' collecting and classifying of the myriad objects that were found throughout the former Roman empire, we are able to piece together an accurate picture of those times. But it is the occurrence of trademarks on all wares that makes it possible for us to reconstruct the ups and downs of the trade, its privileges and monopolies. We even get a good insight into Roman import and export business during those years.

Business Life in Ancient Days

History textbooks invariably represent the ancients as philosophizing or warfaring idlers. They do not tell us, for instance, that a Roman citizen living in the second century A.D. was probably beset with some of the very same problems that occupy our minds today. The complexities of industrial revolution and the over-extension of political and economic powers had brought economic instability and economic crises to Rome. In a relatively short time the center of industrial activity in the old world had shifted from the Aegean Sea to central Italy, and this westward movement was still continuing. The provinces rivaled the mother country. France, or Gaul, as it was then called, endowed with abundant raw materials and a system of cheap water-way transportation, had reached a position in which she could outstrip and outsell Italian merchandise. Glass from Germany was not only cheaper but superior to the home product; British woolens were sought in Rome, much as they are today. Competition with imported goods from every corner of the known world was putting a strain on the home industries, and was leading to the deterioration rather than to the improvement of the native wares.

A Thousand Trademarks

This chapter of economic history is accurately documented in the relics of that once great industry of Roman pottery. We possess a list of the marks of about a thousand Roman potters from the time of the early expansion of the industry into France, and the exportation to Britain under Augustus (37-14 B.C.) to the time when the main potteries of France met with their destruction by the invading Germanic tribes under Gallenus (253-268 A.D.).

Since clay is a most durable material, it is no wonder that we have come upon, literally, mountains of earthenware. Best known among these mounds is probably Monte Testaccio in Rome, a hill rising 115 feet above the Tiber. As its name implies it consists entirely of broken earthenware, and marks the spot of an ancient dumping ground. The large jars used for importing oil and wine from Spain, Greece and Africa, to be shipped through the Mediterranean and upstream to Rome, were unpacked on the Tiber bank in large warehouses. For hundreds of years discarded and damaged jars were dumped nearby and eventually added one more hill to the capital.

From an artistic point of view pottery and brick marks were unostentatious. Originally they consisted of a single line of letters framed by an oblong with rounded or swallow-tailed corners. Later one more line was added and the shape changed to a circle, semi-circle or crescent. Still later square and octagonal marks came into use. The signatures were accompanied by an F (fecit), O or OF (officina), or M (manu). Punctuation was omitted, words were often contracted or reversed, orthography left much to be desired. Sometimes, emblems were substituted for the inscriptions. Two-thirds of the marks on lamps which were always stamped on their reverse side consist of concentric circles and devices such as a wreath or a palm-leaf. Trademark designs vary within the same factory apparently in order to distinguish its diverse editions, a means familiar to us from the marks that are used on porcelain.

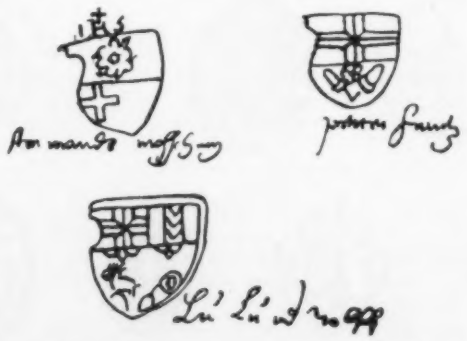
* * *

Figures, or groups of figures, such as Mars, Victory and Cupid, occur on tiles. Wine amphorae sometimes received two stamps; Cnidian amphorae are quite explicit and list the names

A group of signatures and initials from Sèvres marks taken from Guide Illustré, Musée Ceramique, Sèvres

of winegrower, exporter and magistrate. Rhodian amphorae, which enjoyed a special reputation, displayed a rose. Cornucopias, a kneeling archer, or a dolphin appear in the trademarks on jars for the celebrated Thasos wine. In Pompeii an amphora was found with an inscription and the added letters K O R . O P T which was translated as *the best Corcyrean brand.*

Slogans were all but unknown in ancient Rome. Tiles were frequently stamped with phrases such as *Felix Roma* (Happy Rome), curiously resembling modern epithets like *The Sunshine State* stamped on license plates of automobiles. Numbers are also conspicuously absent in ancient trademarks which is not surprising if we remember that our way of reckoning B.C. and A.D. dates only from the eighth century. Romans dated by emperors and consuls. (Napoleon and Mussolini, who felt so much akin to the Caesars, revived this quaint chronological system; the Roman numerals on Sèvres porcelain, which was made during the first Empire, denote the years of Napoleon's reign.)



These rogues' crests from the guild book of the dungeon in Lucerne are a rather odd example of personal trade marks

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The modern trademark boasts a long and distinguished ancestry, emanating from the seals, signets and signatures, the cryptic or symbolic marks of both secular and ecclesiastical usage. Until now little has been written about the trademarks of old, nor has the historical development of trademark usage been set down in any methodical form. On these pages we present excerpts of subject matter by designer Bernard Rudofsky and some reproductions of typical selected trademarks.

Trademarks were imprinted when the clay was still moist. The stamps were usually made of bronze or oak wood, but we also possess specimens made of stone, gypsum, and even clay. The design is in positive relief, more often than in negative. If it seems strange to us that so much detail and data were imparted on simple earthenware, we should keep in mind that a Roman household jar or an oil lamp were works of art which have no counterpart in our present-day civilization.

Fortis Lamps

Though trademarks proper gained wide use with lamps, they were no guarantee against counterfeiters. There is the case of the Fortis lamp. Today we are little acquainted with the finer points of oil-burning lamps but, to judge from their export volume, Fortis lamps seem to have been best sellers. Though manufactured in the Lombard plain, they have been excavated outside Italy and Sicily in the provincial towns of Lyons, Aix and Orange in France, at Cologne, Mayence and Treves in Germany, in Holland, Britain, Spain and Dalmatia. Fortis trademarks were dignified; they featured, besides the name, the usual wreath and palm leaf pattern. The sales methods of the Fortis factory were undoubtedly above the sharp practices of competitors who would take recourse to additional selling inscriptions such as *Vtere* (Use this), or *Eme me* (Buy me).

A general decline in terracotta goods set in during the second century when cheap imitations, made in the provinces, replaced Italian pottery. The Fortis shop lost its market and the unfair practices of rival shops may have had a good deal to do with this. Not only the shapes and decorations of Fortis lamps were increasingly copied, but the Fortis trademark was likewise liberally counterfeited.

The trademarking of pottery in ancient times was not just a queer instance of exaggerated pride. It is quite characteristic that, for example, the signatures of Roman glass blowers are absent from individual pieces of glassware, and that only the inexpensive, moulded factory products carry trademarks. Much as today, ingots of gold and silver were stamped too. Bread was marked with raised signs and symbols, a custom which still survives in Europe where loaves of bread are baked with a deep, fragrant crust.

Stone Cutters' Marks

Quarry marks are about as old as brick marks. Stone cutters left their signs on the walls of Troy and Olympia, Damascus and Baalbek, on the substructure of the temple in Jerusalem, on Egyptian, Persian and Roman buildings. Unlike the stone cutters' marks of the Middle Ages, these old specimens are little known and have not been collected methodically. They were true trademarks, in contradistinction to the Gothic

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Trademarks . . . continued

variety which was without exception of a personal nature. Stone cutters' marks did not reappear until the twelfth century. The medieval variety belongs, as has been said before, to a different category; they are more in the nature of signatures. Medieval stone masons were practitioners of a complex art. Sometimes they combined the knowledge and ability of architect, sculptor and builder, and they were understandably proud of their skill.

In a preponderantly illiterate age, the possession of special knowledge tended to secretiveness, and medieval stone masons developed a complicated ritual of speech and behavior. They recognized each other by their way of greeting and thanking, of knocking at doors, or of buttoning coats. They had their own fashions of lifting a cup, emptying it and putting it down. When standing, they carefully posed their feet at a right angle. They behaved like a caste of oracular priests and kept their professional know-how to themselves. Their state of mind, or at least a good part of it, is graphically illustrated by the marks they chose to perpetuate their work.

Disappearance of Literal Marks

After 500 A.D., the use of literal trademarks disappeared. For a thousand years to come artisans could not read or write the simplest inscriptions. It was a period of unmitigated ignorance; the memory of ancient civilization was dim. Knowledge survived in monastic schools where theology, astronomy, dialectics and rhetoric were the main subjects of study. In the end, even the clerics could hardly read.

The Printer's Marks

The invention of book-printing and the knowledge of paper-making created the craft of the printer. He was his own publisher. Compared to the production of a woodcutter who would make and sell a hundred thousand impressions from one block, his output was small. Gutenberg and the earliest printers made no use of a printer's mark or a colophon. They did not care to advertise the origin of their books, all the more as printed books were considered inferior to written ones. Early collectors would not have thought of defiling their libraries with printed books, and such prejudice often caused dealers to conceal the true character of their goods, and to pass them off as manuscripts. For all that, the distribution of printed books was rapid.

The invention of the printing press alone would not have amounted to much had not paper, the synthetic substitute for parchment, been already available. The western world became acquainted with its manufacture through the Arabs in the twelfth century who in turn had come to know about it four centuries earlier from the Chinese. Quality and origin of paper were indicated by water-marks, and from them it is apparent that the earliest paper came from Italy, Germany and Switzerland.

Bookbinder's mark, England, 16th Century

The turning point in the appreciation of Gutenberg's invention is the introduction of the first printer's colophon and mark. With the growing admiration for type-books printers began to sign their wares, much as the merchants and artists did. The first book to be published under a printer's mark was the *Psalterium Latinum* printed in Mayence by Johann Fust and Peter Schöffer; it was also the first book to carry a publishing date, the 14th of August, 1457. Actually, Schöffer's mark consisted of two distinct marks each on a separate crest. The two designs in the bearings were never satisfactorily explained, for the conjecture that they represent tools used at that time by typefounders and compositors has not been substantiated. They may have been derived from house marks but their meaning, provided that there was any, remained obscure. Printers' marks remained family property, like the registered marks of artisans' guilds. Johannes Schöffer continued to use his father's trademark and later merely changed its stars into roses. Though these marks did not afford legal protection in the full sense, there is little doubt that they served the commercial interests of publishers of that period.

The Orb-and-Four

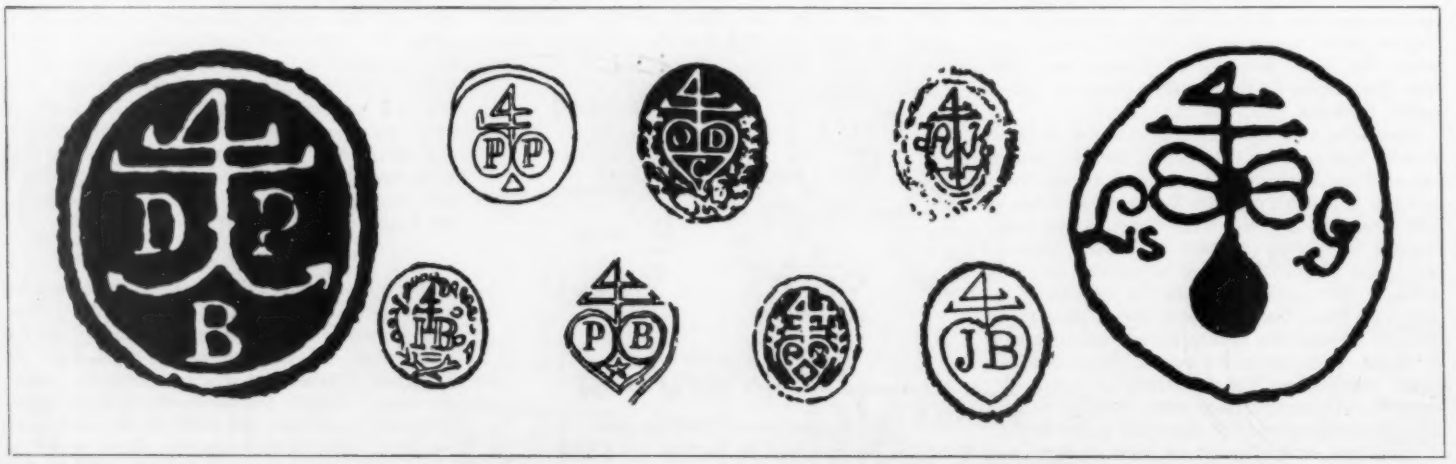
The printer's mark was added by hand, at the end of the book, under the colophon. Sometimes it was stamped in color. Of all its forms, the most typical, and perhaps the most handsome, was a group of designs called *orb-and-cross*. These consisted of a circle intersected by lines and crowned by a cross with a double bar. Together with the *4* design, and the resulting combination of *orb-and-four*, they make up the chief categories of early printers' marks.

The excellence of a trademark is not measured by its immutability. Unfortunately, most modern businessmen think of a trademark as something similar to a family crest, or just as inviolable, and many a graphic artist may have given them this idea in the first place. Apart from the fact that there are few trademarks which could not easily and effectively be improved, historical evidence shows that frequent and radical redesigning of a trademark increases rather than diminishes its importance. The following case history of one trademark, a porcelain mark, illustrates the point.

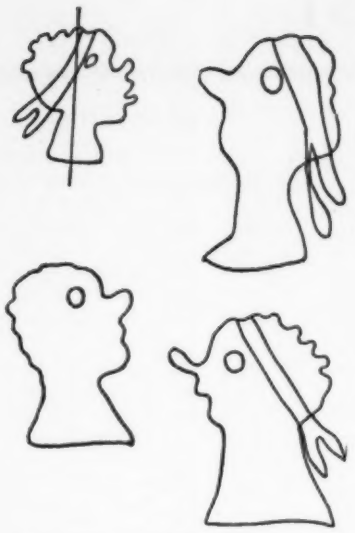
The first factory to produce what is commonly referred to as Sèvres porcelain was founded in 1740 at Vincennes. Sixteen years later it was moved to Sèvres, where it still is today. In 1760 it became the king's property and was named *Manufacture de Porcelaine de France*. A decree issued in that year assured the king of France a monopoly on porcelain; he alone was privileged to manufacture porcelain of every description . . . plain, decorated, painted or gilded. Competitors risked not only heavy fines, confiscation of their wares and raw materials, but the destruction of their kilns as well. Only the making of the coarsest kind of porcelain was permitted to them, provided that it remained undecorated and ungilded. If painted, it was to have only one color, blue.

Royal Trademarks

Such superb protection did not make a trademark superfluous. On the contrary every piece of the *porcelaine du Roi* was not only fastidiously marked with the symbol of the factory, but was signed as well by the artists who shared in the work. Several hundred designers, painters, sculptors and gilders left their marks on Sèvres porcelain, and some important pieces bear as many as five signatures. Political events caused continuous redesigning of the factory mark itself; the rapid succession of two royal, two imperial and three republican regimes found a corresponding graphic expression. A special chronology was devised for dating Sèvres porcelain. The four digits of the year's date were substituted by a letter of the alphabet. *A* to *Z* stand for the years 1753 to 1777; double letters mark the following years, such as *AA* for 1778. Complications set in with Napoleon's imperial style of dating, which accounts for *IX* instead of 1801, *X* instead of 1802. Some marks of Sèvres were used to designate faulty or defective pieces only. And, needless to say, artists themselves often had several different ways of signing.



Silk merchants' marks, France, 18th Century . . . from L. Gruel, Recherches sur les Origines des Marques Anciennes



Watermarks using Moors as symbols from C. M. Briquet's Les Filigranes, France, Fifteenth Century

The story of the Sèvres trademarks could be matched by many others. Though the number of porcelain marks, occidental and oriental, is astonishingly large, a great many of them are fairly well known to people other than collectors. One might even say that we are more familiar with them than with the trademarks of our own time.

Primitive Marks

Even such commodities as men and animals were not exempt from being marked. The branding of slaves as household goods was practised early in this country; today, branding is restricted to cattle. In Paraguay women were marked on their breasts as a man's property. Roman slaves, however, or prisoners of war with the rank of slaves, were earmarked and if we may draw an inference from the highly diversified earmarks of cattle, hogs and sheep, we may assume that this ancient system probably had some artistic merits. Earmarking is still widespread in our time. Laplanders clip the ears of their reindeer; Samoans mark the ears of their pigs. Each tribe has its own way of earmarking the animals, and these designs are exclusive, like the tartans of Scotsmen. The marks are composed of slits which vary in number, size and position. The reader who is ill at ease about brand- and earmarks might feel better about inked stamps. Still more innocuous is the kind of device which is simply attached to the object in need of protection, like the labels of our dressmakers.

Telling the Story of a Product

Documents received seals, but many mobile and immobile goods were distinguished by similar appendages. As physical protection goes, a seal is most fragile but, by implication, it is stronger than the best lock; like the modern label, the seal effectively symbolizes the total sum of forces which stand behind it. Even Pliny lamented the passage of the good old times when sealing was unnecessary. "Nowadays," he complains, "one has to set seals even to victuals and wine, to protect them from robbery."

The function of the ancient seal on a wine amphora was later usurped by the cork of the bottle, the shape and length and quality of which are of utmost importance. Though a good wine label may tell the story of the product exhaustively, no respectable cork fails to repeat in branded letters the most pertinent facts . . . the name of the estate, the vintage year, and the place of bottling. Wine sold in containers of the screw-top variety belongs in the category of beverages.

These, then, are roughly the characteristic stages in the development of the trademark through the ages . . . early beginnings as a means to identify the quality and origin of essential materials such as stone, brick and metal; the emergence in antiquity of the true factory mark for industrial products like pottery and glassware; the reappearance after a thousand-year hiatus of the artisan's mark; a short interlude of elegant and thrifty forms of trademarks in the humanistic age, followed by quickly changing eclectic styles that persist into the twentieth century. If anything can be gained from the study of historical trademarks, it is the realization that at no time were they as dull as they are today. We should like to add that this is not the fault of the graphic designer.

Most of today's trademarks were never meant to be scrutinized and consequently are hardly ever looked at. As far as the customer is concerned, their task is merely to assure him of the exact sameness of the product. Quite fittingly many designs are as plain as traffic signals. Whatever the present role of the trademark may be, it is, no doubt, obscured by a growing emphasis on the trade name. Though a picture is said to be worth a thousand words it seems that trade names, especially of recent coinage, have a much stronger grip on the mind than a trademark. For example, the names of the interesting substances sold as so-called breakfast foods, are on everybody's tongue. But has one ever set eyes on their trademarks?

Hazards in Foreign Lands

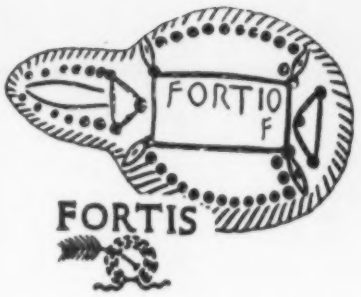
Sometimes a trade name not only obscures the trademark, but may nullify the very efforts of the designer to improve its appearance. Such is the case when a name evokes unpleasant associations or carries an unwelcome double meaning. It also happens that names, the pronunciation of which causes doubt, are shunned by the English-speaking nations who are forever plagued by the uncertainties of spelling and pronunciation of their language. On the other hand, a trade name which is good for the home country sometimes turns out to be disastrous when used abroad where it may spell an unpleasant or obscene word. This is especially true for abbreviations and synthetic names. Olds used to display his initials R.E.O. on the radiators of his cars. In Spanish, Portuguese and Italian, *reo* means criminal and this coincidence did not contribute to popularizing Olds cars in South America, or so we are told. The name of the luxury liner *Caronia*, launched a few years ago by the Cunard Line, is another case in point. It happens that the Spanish *caroña* and the Italian *carogna*, both of which mean carrion, are pronounced caronia. To Latins, whatever the intricate merits and typographic excellence of the ship's menu may be, its first line is unpleasantly suggestive.

Appropriating Design

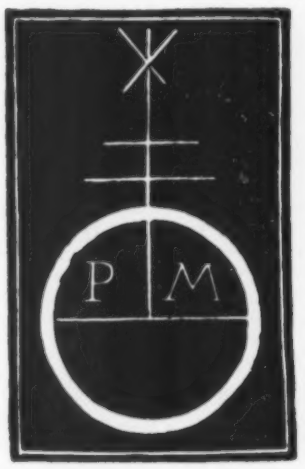
An illiterate or semi-literate clientele is a considerable asset to the merchant who wishes to dispose of counterfeit wares, and the designer of the trademark may even become, quite innocently and unwittingly, the accomplice of the cheat. There are instances, mostly in South America, when manufacturers appropriated the visual design of a competitor's trademark and simply changed the name or part of the name. Customers unable to read would go on buying the counterfeit product with the familiar label, probably without ever noticing the fraud.

* * *

But trademarks will continue to exist and flourish as long as man is engaged in commercial production, depending on his faith in the excellence of his product and on his desire to identify, foster and perpetuate it • *END*



Saucer-shaped lamp with pointed nozzle. The trademark reads FORTI(S), OF (FICINA), *or* FORTI(S) F(ECIT) . . . *from H. B. Walters, Catalogue of Greek and Roman lamps in British Museum.*



One of the famous marks used in Barcelona at about the time of Christopher Columbus. The initials P M stand for Pierre Miguel.

A selection of booksellers' marks originating in France in the Seventeenth Century.

WHO CAN SPEAK FOR THIS INDUSTRY?

Textiles and Fashion form a seven billion dollar industry, yet lack a single voice to tell their story to the nation

THE NATION'S RETAILERS have a Lew Hahn. Motors have a Charles E. Wilson. Movies had an Eric Johnston. Even baseball had its Judge Kennesaw M. Landis. But the American textile and fashion industry, second only to food as the nation's prime producer of income and employment, has no central body or single voice to protect as well as publicize its contribution to our economy.

During the last war a moving picture magnate, addressing a group of executives from this field said: "The whole steel industry could be stuffed quietly in a corner of your business; but the lowliest steel man can make the mightiest Senator quake, whereas you textile people have never proved your importance to either the public or to its administrators." How seriously the lack of a spokesman has been felt was proved not only during World War II but, more recently, by the delay and contradiction which accompanied the issuance of OPS controls for the textile and fashion manufacturers.

For a More Coordinated Industry

Had there been a clearly defined organization of the numerous segments, with a clearly charted program for the mutual good of the consumer and the producer . . . under the careful guidance of a competent individual . . . many of the trying experiences suffered by individual companies and the industry as a whole could have been averted; production and profits could have been maintained at a more uniform level at the war's end; much intra-industry friction could be converted to smoother cooperation.

No easy task is involved in the formation of such a central policy group as we envision, nor in the selection of the right man to organize and direct the workings of that body. It requires a welding together of many types of business . . . the chemical fiber producer, the grower of natural fibers, the spinners, weavers, knitters, finishers, dyers and converters . . . each with different industry problems to be sure, yet all with but a single objective . . . to build a sounder textile industry.

Who is the Man?

Such a job of fusing and direction calls for an individual of many talents . . . a working knowledge of the textile industry in its many facets. He must know them not as a technician, but in their relation each to the others as a part to the sum total; he must understand their values, their potentialities, and the flux-and-flow of life-giving ideas in their arteries. He must be a specialist in legal spheres. He must be strong enough to level out the disproportionate aims of any one group which might disturb the balance and progress of the whole, yet be fair-minded in both analysis and administration. He must be recognized and respected as a person of character as well as ability, so that those outside as well as within the textile industry will work with him.

When such a man is found, and then persuaded to assume the post of industry spokesman, much is to be done, and much can be done, to bring open recognition to the textile industry for its social as well as economic contribution. A truer picture of textiles as a whole can be painted for both public and legislator; a more wholesome relationship can be established with labor; more stable conditions can be established through long-range, coordinated planning at all levels.

This calls for a man of stature in thinking and administrative power. To find such an individual may well require months, possibly years; and yet it is a necessity if the textile industry is to have a respected spokesman to protect as well as to speak for all. *WHO IS THIS MAN?*

letters to the editor

ON CREATIVE DESIGN

To THE EDITORS:

AMERICAN FABRICS is an excitingly fabulous magazine. I have just finished reading the Paisley issue. The material, illustrations, contemporary adaptations were all interesting, but I felt that design was being *promoted* on the taste of the industry.

Modern designers can learn much from historic ornament, as modern architects can learn much from studying Gothic architecture, but it seems ironic that in our enlightened times we find such direct imitation of former designs.

It would seem that the more creative attitude would be to study how former artisans solved their problems with their tools, materials and philosophies. Then we can study our tools, materials and selves more intelligently and solve our design problems much more creatively. The transfer of a motif is not creative design.

In the meantime, we can expect to break out in a rash of pseudo-Paisley design. But we will soon tire of an overuse of the motif and discard it.

Vernon Bobbitt
Chairman, Dept. of Art
Albion College, Michigan

We believe that one of our chief functions in AMERICAN FABRICS *is to give the creative people of our country the basic motifs which have, in a way, stood the test of time. In no way do we recommend that they mechanically imitate the specific examples reproduced.*

The approach which we try to encourage is that of making use of source material. Is it not a fact that in every era the sincere artist and craftsman make use of the good and sound work of previous generations? During the Renaissance the moderns of that period received inspiration from the Greeks. In our own age many of the so-called moderns have been influenced by the art of the Orient, by African sculpture, and so on.

The great modern designers are those who are closest to the spirit of the great tradition even though there is no external resemblance in their work to the forms of the past.

We certainly agree that the copying of a motif is not a creative act, and we would deplore a break-out of psuedo Paisley design. We try to show the best of the past and of the present, in the belief that all of the past in one way or another is connected with the present and that we are building the future by the work of both past and present.

— THE EDITORS

CARMEL LIBRARY

To THE EDITORS:

I cannot resist telling you how I first chanced across your unusually beautiful and highly informative publication.

Several years ago, while living in California, I went on a vacation to the enchanting seaside town of Carmel where there is a picturesque small library. While idling through the magazines on one of the long tables in a room that boasts a beautiful large fireplace and a wonderful floor-to-ceiling window through which the large trees outside form a living painting, I picked up three copies of AMERICAN FABRICS and immediately had the feeling of coming upon a treasure. I returned each night to revel in these books. I was told that one of the town's residents subscribed to it and then donated the copies to the library. Whoever the person was I've always had a kindly feeling for him. The magazine and the setting in which I discovered it were so fitting one for the other, I considered that one of the nicest of many colorful experiences that Carmel offered me on that trip.

Laura Tubis
Philadelphia, Pa.

FLIGHT INTO EGYPT

To THE EDITORS:

I was interested to see the fine examples of Renaissance painting and stained glass which illustrated your pages on *The Flight into Egypt,* and especially the painted carving from Spain, now in the Metropolitan Museum.

Perhaps your readers would be interested in this still earlier alabaster carving from Spain, dating from the 14th Century. I have had a print of this beautiful piece for a long time and am pleased to send it to you. It shows the identical scene, with the palm tree bending to allow the holy family to pick the dates from it. This carving is now in the museum at Vic, Spain.

Albert P. James
New York, N. Y.

A READER WRITES

To THE EDITORS:

Why I find AMERICAN FABRICS of value:

1. Authentic descriptions and characteristics of all new fibers, so much in vogue at present, as soon as they become newsworthy.
2. Historical data on all natural and man-made fibers and fabrics.
3. Full information on all types of new finishes.
4. Questions from the consumers in terms of the layman. These questions tell many things about which complaint may be made, and many times offer the solution. Textile failures such as slippage, fume fading and other difficulties are discussed. Consumer Page is a real feature.
5. Information by way of topnotch advertisements. Actual swatches of material and exhaustive copy of all new fabrics and blends.
6. Information on the latest dyes, processes and dye uses.
7. Educational material in all fields of textiles worthy of circulation. Schools and libraries use AMERICAN FABRICS as textbooks and for seminar study.
8. I have seen AMERICAN FABRICS in offices in many of the major capitals of the world.
9. Descriptions of pitfalls which face certain fields in the industry.
10. Glossaries of textile terms in succinct form for the layman.
11. AMERICAN FABRICS has done much to bring the fashion apparel and textile trades much closer. Previously the textile men were interested in raw material, construction, color and finish; now they are interested, in addition, in the cut, fit and trim phases of apparel, and in the end use and consumption by the public of their products.
12. It is a magazine of tremendous artistic distinction.

Instructor in Textiles
New York City

INTEREST IN PHILOSOPHY ARTICLES

To THE EDITORS:

. . . To those in the textile field and those quite apart from it, AMERICAN FABRICS has been a source of pleasure and inspiration. At the moment we are particularly intrigued by the religious and philosophical articles: for example, *Excerpts from Religious Teachings,* issue No. 16. What other articles has the writer done in earlier issues? It is fine.

Mrs. Marvin Campen
Ass't Prof., Textiles Division
Mills College, Oakland, Cal.

In former issues the editors presented articles entitled "Truth Across Ten Thousand Years," "Man, His Limitations and Possibilities," and others.

SPEAKERS BUREAU PROGRAM IN TEXTILES

To THE EDITORS:

I was very interested in your introduction article on Photogram Textiles in your Winter edition No. 16; in fact, it was more than interesting, it was exciting.

I am a member of the Speakers Bureau, giving talks on decorating and home furnishings to women's organizations in Detroit and through the State of Michigan. I am preparing new talks for the coming year, two of which are *Fashions in Textiles* and *Naturalism in American Style Decorating.* These Photogram fabrics by Joseph Breitenbach would fit into both of these talks very well and I would appreciate knowing of any resource for them. Even though they may not be in production, they would be interesting from a point of things to come, perhaps in a small way stimulate demand for them.

Your article in the Spring issue on Paisleys was interesting and I hope to tie up with it also. Hope its promotion will be as successful as Clan Tartans were last Fall.

Bruce B. Bradshaw
J. L. Hudson Co.
Detroit

DESIGN APPRECIATION

To THE EDITORS:

As a painter and teacher I am moved to express my appreciation and enjoyment of your beautiful publication AMERICAN FABRICS. With your current issue, Winter 1950-51, I feel a particular affiliation, because of my own experience with the Stapler Fabrics so ably described in your article *New Lamps for Old.* Approximately three hundred of my high school students had a series of meaningful appreciation and creative lessons built around a study of the designs discussed in this excellent article.

Unusual too is the opportunity given in other parts of this publication for tactile and kinesthetic experiences so important to people of any age. I have recommended this publication to our school librarian and suggested that it be ordered for our school.

Robert D. Goldman
Cheltenham Art Centre
Philadelphia

CASHMERE BOOKLET

To THE EDITORS:

The Cashmere booklet which appeared in a recent issue is most attractive and informative and should be very useful to the sales people in the departments selling cashmere garments.

Daphne MacKnight
The May Company
Los Angeles

THE CONSUMER

The millman, the converter, the apparel manufacturer, the retailer, the retail clerk . . . all throw at Mrs. Consumer words and phrases as selling blandishment . . . all assuming that she knows what they're talking about. Sadly enough, it's gibberish to her. And so writer Cora Carlyle gathers a group of typical

Q. I often see the word *classic* associated with some supposedly outstanding garment created by some outstanding designer. What is a *classic*, in its full meaning or interpretation?

A. Some styles have been so well received and so long accepted over a period of time, that they are continuously made with little change in design, motif or pattern. Some examples are berets, pumps, reefer coats, slip-on gloves, sweaters. In this respect, *classic* merchandise is in contrast with so-called *high style* merchandise, which may change from season to season in line, color, silhouette, symmetry, etc.

Q. Can you give me the concise meaning of *scroop?*

A. It is the crunchy or rustling sound that silk fabric makes when squeezed in the hand or rubbed with the fingers. The sound is characteristic of silk and is a quick identification by fabric experts for silk materials.

Q. In many advertisements for dressy coats for women, I have seen the material *ottoman* mentioned. What does it look like, and is it a fine fabric?

A. Ottoman is a fabric with a charactistic broad, flat rib effect in which the ribs may be of the same or different sizes. The ribs run in the filling, crosswise, or horizontal direction in the goods. Ottoman, as a fabric, is hundreds of years old and was first made in silk during the Renaissance. Present day ottoman features rayon warp and cotton filling, although other yarns may be used. The fabric will give service provided the wale or rib is not too pronounced and the texture sufficiently high to afford compactness. When making up a garment, the fabric is often cut so that the ribs run diagonally, thereby adding to surface interest. Always examine the material well and hold it to the light in order to note the compactness of the weave. Ottoman is a high fashion for the coming seasons.

Q. Will you please give me your interpretation of a 60-gauge stocking?

A. In hosiery manufacture, gauge measures the number of loops around the top of the stocking where the knitting begins. 60-gauge means that there are 60 loops width-wise in each one and one-half inch of fabric. This would mean that there are 40 wales or loops to an inch. Fabric of this type is very sheer and the construction is termed *high style* in advertising circles.

Q. Please give me a short meaning of *resist printing*, often used in advertising rayon dresses.

A. In resist printing, the design is printed with a paste on white or light colored fabric. The fabric is then dyed, and the resist area covered by the chemical paste is unaffected. The paste is then removed by chemical means, leaving the design in the original white or light color. The white areas may or may not be printed. Resist printing is much used for designs which have dark background and white or light colored motifs.

Q. What is balloon fabric and what is the connection between it and its use in garments? Was the cloth originally used for balloons?

A. Yes, the cloth was originally used for balloons. The yarn is spun from superior, selected cotton. A plain weave is used in the construction which is very tight, compact and precise. The thread count may run to as high as 260 threads to the square inch. A popular type is the 40-inch fabric which runs to 6.30 yards per pound; texture is 124 ends and 136 picks per inch.

The cloth was designed originally to be as impermeable as possible, since it had to hold the gas placed in balloons. Even so, it was not always tight enough for this purpose and had to be treated, in addition. One square yard of the fabric weighs about 2.7 ounces.

Because of its light weight, resistance to breezes and wind, and excellent wearing qualities, the material has become a favorite for use in jackets, shirts, windbreakers, shorts, etc. If a warm lining is added, balloon cloth is ideal for cold weather wear.

Q. How can I restore color to curtains which have faded? They are made of printed voile . . . a high quality, rather expensive material.

A. If only one or two colors have faded from the material, it is possible to obtain textile dyes used for stenciling and hand blocking. These are applied by hand or by use of a brush. This method of retouching the color is practical only when the areas to be retouched are small.

If the fading is all-over, there is no remedy except to re-dye the material. In case you decide to do this yourself, be sure to use a color remover first. Then try a small portion of the curtain in the dye you expect to use to be sure that the color will be clear; then proceed according to instructions.

Q. I need to wear white hosiery, since I am a nurse, but want to register a complaint that I cannot find the refinements in white hosiery that I do in the hose I buy for off-duty hours. Why is this?

A. On the contrary, manufacturers have gone to great pains to take care of the very large number of nurses, beauticians, dietitians and technicians, who wear white hosiery while at work. Formerly, white hosiery was rather clumsy and thick, especially in the foot and welt portions, which had to withstand hard wear. With the advent of sheer nylon yarns, the picture has changed. White hosiery is now made in fine denier from tip to toe. If desired, you can purchase stockings with fine lisle yarn in the foot portion for comfort and absorbency. At present, proportioned lengths and non-run constructions are also available.

WANTS TO KNOW...

Mrs. Consumers from time to time . . . asks them what they'd like clarified in textile terms . . . and then fires the questions at Dr. George Linton. Here is another batch. The moral is: Just because you know what you mean, don't take it for granted that the other person does.

Q. Just what does a lining do to produce warmth? Are there any other functions of linings?

A. Between the lining and the outer fabric of a garment, there exists an air space. This acts as insulation, so that the body is kept warmer or cooler than the outside temperature.

Other functions of a lining are as follows: (1) Fit and hang of the garment are improved. (2) Garment does not cling to the wearer. (3) Garment slips off and on more easily. (4) Inner construction details are concealed.

Q. Recently I saw the word *nylonizing* used in an advertisement. Please tell me about this.

A. This is a new finishing process which is said to make nylon more comfortable to wear. The finish is actually bonded to the material during the curing process and will not wear off or wash off, according to the manufacturer. Nylon so treated is said to absorb moisture faster, to be softer and more pliable. The appearance may be slightly duller, but the chief effect is that the finish absorbs water readily and thus the garment does not feel sticky or clammy. The process is now widely used on hosiery, and also for treating nylon fabrics for girdles, brassieres, blouses and lingerie.

Q. How can I be sure that my dresses and suits are color-fast; that is, that they will retain the same colors as long as I wear them?

A. First of all, much depends on what you mean by color-fast and what type of garment you have in mind. Fabrics can be constructed so that they are color-fast to light, washing, perspiration, pressing, dry-cleaning, crocking, etc. Fabrics can be so constructed as to resist any of these enemies of color-fastness. To feel any certainty, however, as to what a color will do, you are dependent on information on labels or instructions from sales people. Always keep and read garment labels.

Q. The cleaners rejected my chaise-longue, covered with pure silk taffeta, saying that they were not sure of the inside stuffing. Do you think I could attempt to clean it myself? If so, what should I use?

A. Apparently your cleaners have had unfortunate experiences with furniture stuffed with material whose stains came through on the covering fabric during the cleaning process. Consequently, unless they were to open up the covering material and test the stuffing, it is difficult for them to know the character of the stuffing.

We think you might attempt to clean the chair yourself, but you should safeguard your efforts by trying the cleaning process on an inconspicuous portion. After the area is thoroughly dry, you can judge for yourself whether or not to proceed further.

There are several well-known upholstery shampoos on the market. Try one that is well recommended to you. Be sure to follow the manufacturer's directions on the label as to water temperature, preparation of the shampoo and direction of the cleaning stroke.

Q. Why is it that my evening dress of Anderson gingham never seems fresh when it is dry cleaned?

A. Dry cleaning solvents will not remove water soluble stains, such as sugar and perspiration. Thus, in order for your garment to appear fresh and clean, it would be necessary for you to send it to an expert hand laundress who will treat it with proper care and cleanse it with neutral soap. Such a garment must not be subject to harsh bleaches or strenuous methods.

We could recommend that you wash the dress yourself, but we realize that an evening dress might have some special trimming which would make it very difficult to iron at home. Professional care is necessary with garments of this sort.

Q. My children's dark-colored dresses seem to be subject to gas fading while hanging in the closet. What causes this? The dresses generally are of acetate rayon.

A. Your conclusion as to the cause of fading is correct. Gases in the atmosphere affect many types of fabric in this manner, particularly acetate rayon fabrics. Even though the garments are hung in a tightly closed closet, the atmosphere still permeates, and fading will occur. The only remedy is to re-dye the garment and to remember when shopping to ask if the rayons you buy have been treated to resist gas fading.

Q. The weather seems to affect the drapability of my pure silk taffeta draperies. How shall I adjust the room temperature?

A. It is unusual for silk draperies to be affected in this manner. Are you sure they are not made of rayon? In any case, the drapability . . . and by this we presume you mean sag and stretch . . . is not caused by the temperature, but by changes in humidity. As the material soaks up moisture from the air, it becomes heavier and stretches. Normal length is regained when the fabric is dried out again. If you can control the humidity in your room where these draperies hang, your difficulties will vanish.

Q. I like nylon articles and I have several, such as blouses, slips and a dress. On the handtag the information given asserted that the garments need not be ironed. I have found, however, that after washing they do not seem to look like new. Should these garments be ironed or not, and what would you suggest I do?

A. Experience has shown that a quick pressing with a cool iron will improve the appearance of the cuffs, any double edges, and other areas where there are stitching lines. The nylon fabric does not have to be damp when this pressing is done.

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American Fabrics (Reporter Publications) 350 Fifth Ave., New York 1, N. Y.

Raw Silk
Established in 1878
Manufacturers &
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Raw Silk, Thrown Silk &
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. . . dedicated to the belief that Fashion begins with the Fabric . . . that the American textile industry casts a major influence on the economic and social aspects of the world in which we live . . . that American textiledom has deservedly attained the world's pinnacle from which it can never be dislodged. To all who work within or with the industry this volume number nineteen of American Fabrics is offered as a measure of help, of service . . . and, we hope, of inspiration.

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American Fabrics

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RAYON MAGIC... DONE WITH MIRRORS

Paris-inspired embroidery lights up Sam Friedlander's new dancing gown with tiny bolero. Designed in Burlington's rich, rustling, "Fantafaille," woven of Avisco Rayon and cotton. Bonwit Teller, Inc., New York; The Blum Store, Philadelphia; I. Magnin & Co., California and Seattle; Montaldo's.

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RAYON

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Rug woven of Avisco Rayon by Edward Fields

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inspired by sterling silver by
Reed & Barton

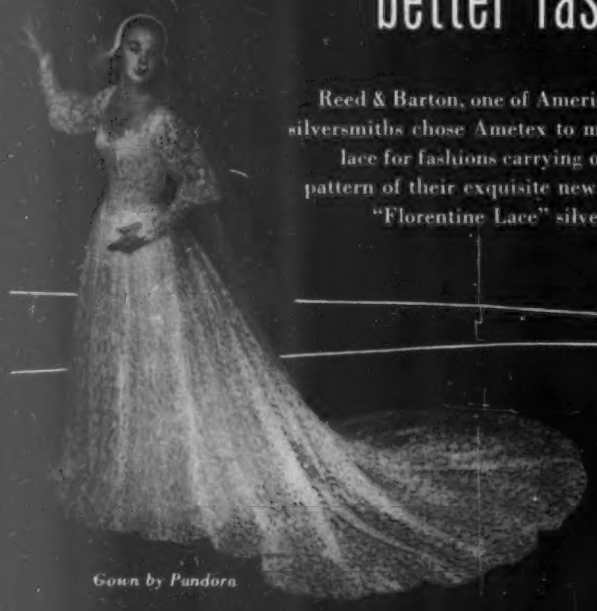
Laces by Ametex®

are on better fashions

Dress and Gown by Andora

Peignoir and gown by Saab

Reed & Barton, one of America's leading silversmiths chose Ametex to make the lace for fashions carrying out the pattern of their exquisite new "Florentine Lace" silver!



Gown by Pandora

Gown by Du Benay

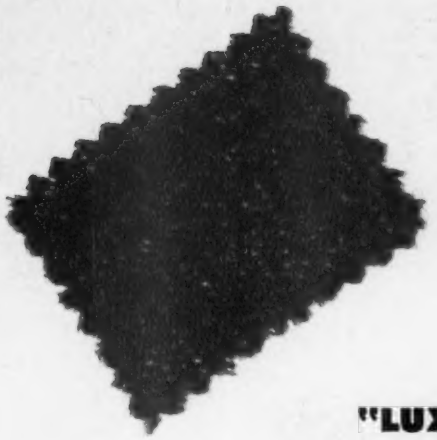
Other full page ads (many in color) on "Florentine Lace" silver are to appear in Ladies' Home Journal, Glamour, Mademoiselle, Harper's Bazaar, Vogue, Seventeen, House Beautiful, House & Garden, Gourmet, Town & Country, Brides Magazine, Brides Reference Book, Modern Bride, Guide for Brides.

Dress by Filcol

The fashions shown here are featured in VOGUE *and* HARPER'S BAZAAR *in* OCTOBER.

Blouses by Dorothy Korby

American Textile Co., Inc., 25 East 31st St., New York 16 Mills: Pawtucket, R. I.



"I'm using an exciting new novelty crepe knitted of dynel in this blouse.
The fabric looks so luxurious, feels so soft—that's what attracted me instantly!
And when I learned how wonderfully serviceable dynel is,
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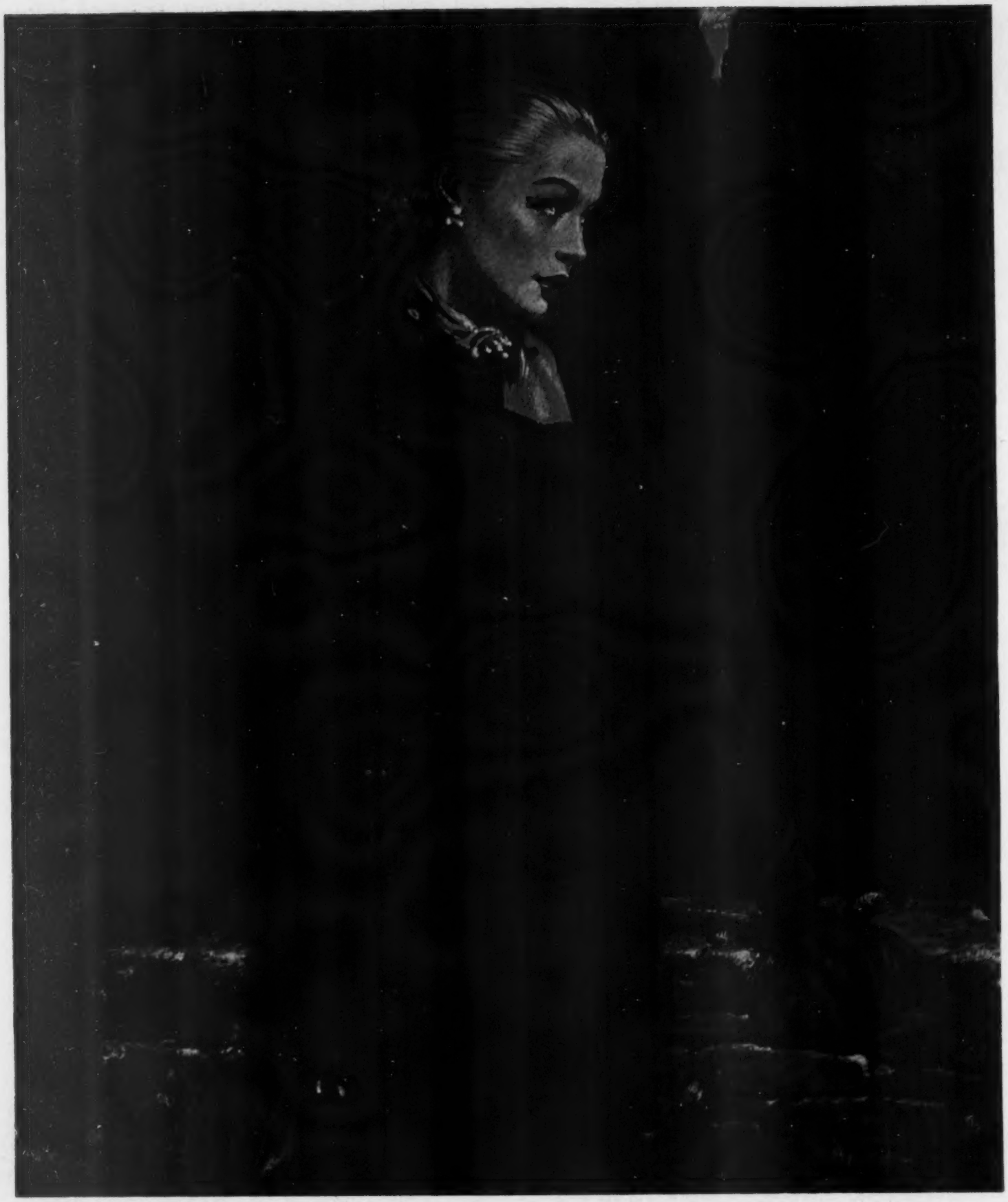

COSTUME OF HOCKANUM WOOLEN

STEVENS FABRICS

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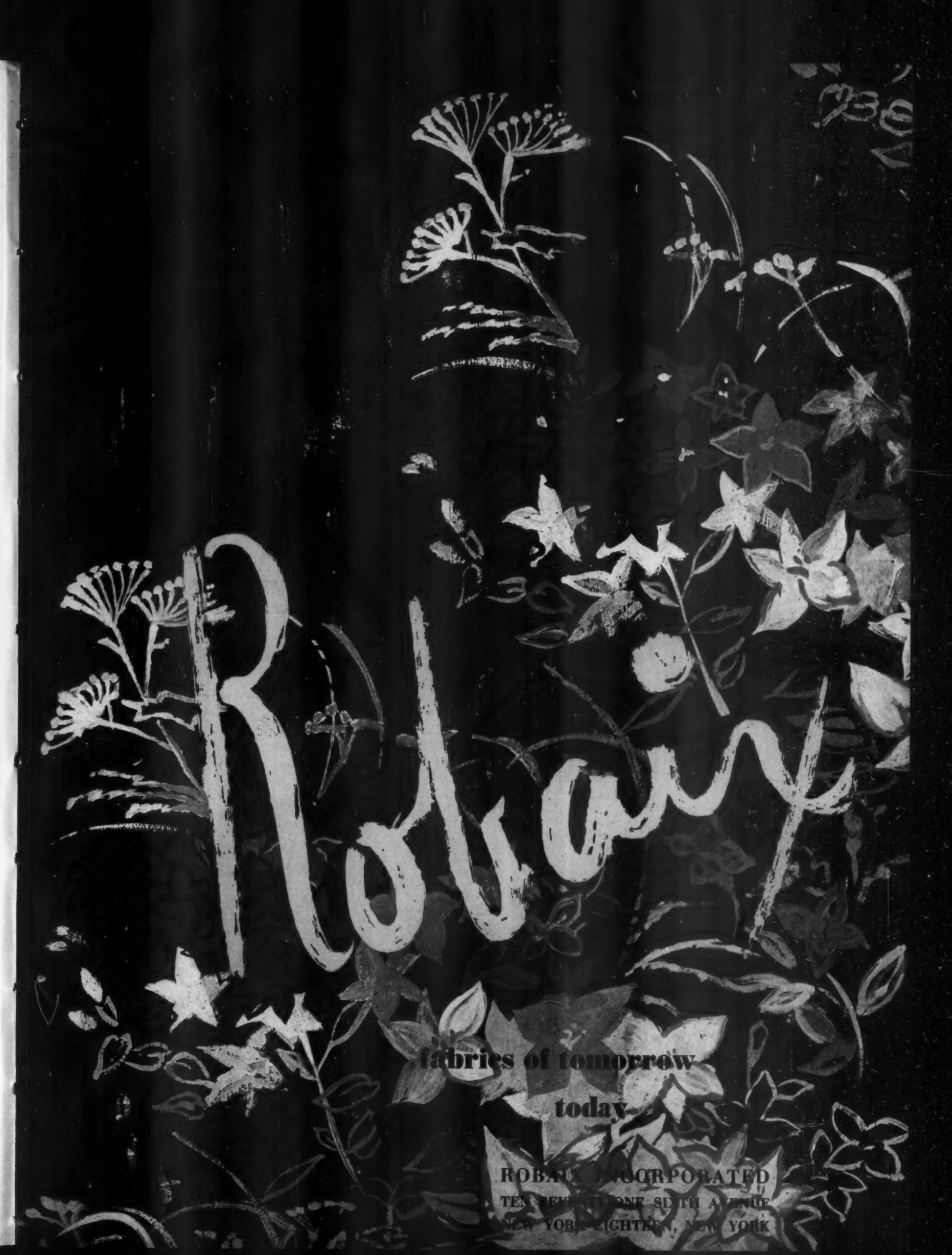
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Celanese® CORPORATION OF AMERICA, New York 16

*Reg. U. S. Pat. Off.

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containing Celanese* acetate.

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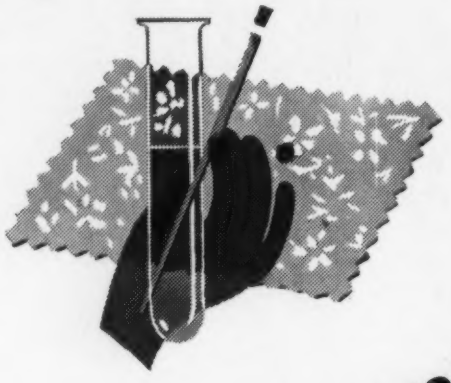

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Dress by Nathalie Nicoli

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And who but Beaunit makes such an inspired fabric as Trulure, a diagonally twilled velvety rayon that drapes you in cuddly, wooly warmth . . . lasts like a true love!
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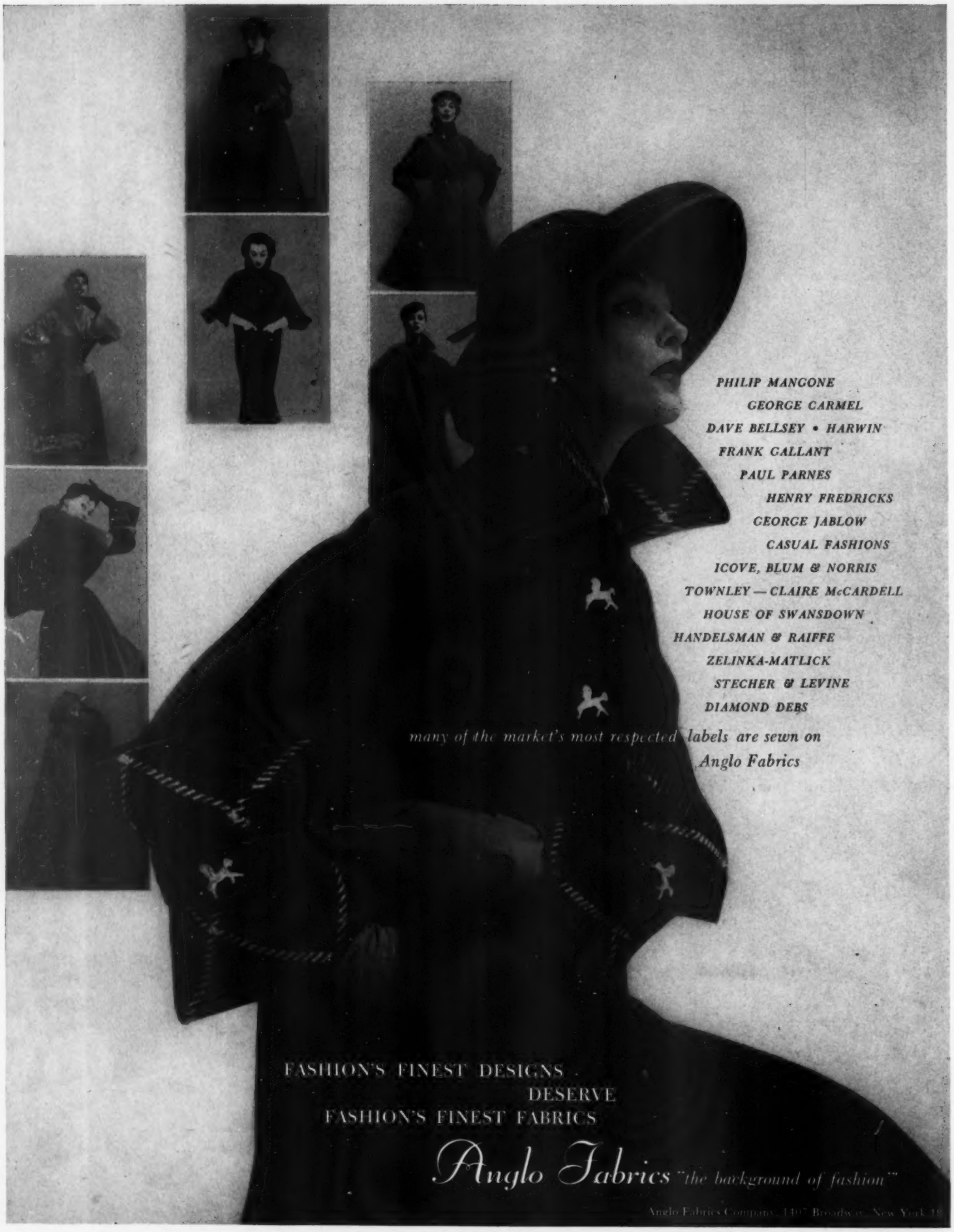
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by

Crown manufacturing company

SELLING AGENTS: AIREDALE WORSTED SALES CO., NEW YORK

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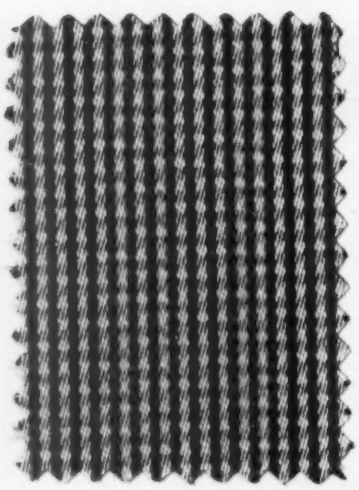

What is Vicara?

Vicara is the miraculous new textile fiber produced from a natural protein by Virginia-Carolina Chemical Corporation. Vicara is similar in many ways to wool and cashmere — animal protein fibers. But Vicara has a unique combination of advantages not possessed by any other fiber — a luxurious, cashmere-like appearance . . . a soft, comfortable feel . . . high absorbency . . . moth and mildew resistance . . . and it does not shrink like wool.

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Virginia-Carolina Chemical Corporation • Fiber Division • Richmond, Virginia

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enhancement and quality maintenance of all fabrics
consideration of the consistently changing variations listed above.

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100% VIRGIN WOOL

because... "fine fabrics are the foundation of fashion"®

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DONELLA...55% Orlon—45% Wool. If you like wool, you'll love this wonderful fabric. Wool, plus Orlon, results in a fabric with the characteristics of a fine worsted... handsome, luxurious to the touch, lighter in weight, stronger. B. H. Wragge chooses Donella—it tailors beautifully, pleats permanently—for a dress that makes you long for fall.*

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worsted-wool jersey
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If it's *news* you're after, see the line that's in the style headlines—Riegel.

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Needed

More Answers To
CREATIVE STARVATION . . .

As true today as in 1851; as true in textiles as in every other phase . . . people respond to showmanship, novelty, emotional appeal. . . .

Creative Thinking vs Creative Starvation

(Part III)

Why does the textile industry require more Creative Thinking? What has been accomplished thus far, and in what direction can technologists and designers move?

As soon as the master planners of war had moved their chess pieces into position to indicate the imminent ending of World War II, the sounder thinkers within the American world of fiber and fabric turned their minds toward planning a sound economy for their industry under peaceful conditions. With an ear attuned to consumer sentiment, it was clear that while the public had been accepting whatever was available as long as there existed at least the excuse that a war was being waged, there was building up a strong and substantial boredom with the unbroken production of unimaginative fabrics and designs which had marked the last two or three years.

There was also the question in the minds of textile economists as to whether, and to what degree, the public would continue to buy soft goods once there were made available increased quantities of long-absent hard lines. When these two elements were weighed together, it became obvious that the sooner the textile industry began to think . . . and to produce . . . on the basis of *ideas* rather than capacity production, the sounder would be the future of its business.

These were points clearly pointed out in the earliest issues of AMERICAN FABRICS; in fact, from its very inception this publication has, in issue after issue, indicated specific roads which the textile industry might profitably follow. Several of the suggested industry-wide themes are mentioned briefly in these pages, and certainly the best creative minds of the industry have been productive of many, many more of significant worth. But this is the time, we believe, when the leaders must prove their worthiness by pointing the path for the future.

The question arises: is Creative Thinking still a requisite? How far has it come? Have all of the segments of the textile world . . . the chemists, the agriculturists, the spinners and weavers and finishers and designers . . . have all of them, rather than a few, done everything possible to inject more Creative Thinking into their respective work? In short, are all of us working together against the normal human tendency to become bored with sameness . . . the tendency which, in the past few months, has indicated that it could potentially throw the entire textile economy into a chaotic and unprofitable condition?

It is significant that since the war's end, regardless of the general standing of textile activity, certain producers managed to come out with a far better-than-average showing in both volume and profit. These were no accidental occurrences; the cold light of analysis shows that they did better than most because they *planned* to do better . . . and the planning began at the creative level. Sometimes it was in the instance of a new color approach; sometimes in a new appeal to the tactile sense; in still other instances it was in emotionally stimulating design ideas. But the result was that the ultimate sale was created by vision and sound planning at the point of genesis.

If the industry needs to be reminded of the need for more

. . . while the field which is devoid of habit-jarring thinking is also lacking in people . . . which ultimately results in a lack of profit.

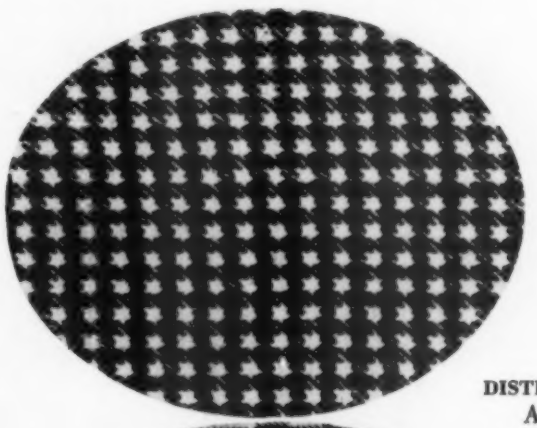
Creative Thinking today, it has but to glance around and note the many casualties among fabrics which were for years considered immune to the consumer's vagaries of taste. What has happened to the traditional faille? the manipulated gabardine? the standard dress cloths of numerous types which are today glutting converters' shelves? Clothes designers apparently carried these so-called staples to the point of glut, but even their fine ingenuity cannot today carry these fabrics further.

The case is clear for more Creative Thinking. As we have often reminded our readers in the past, we can but point the broad road which lies ahead, and ways in which to avert pitfalls. There is no intent on our part to inspire regimentation of any sort, whenever we recommend a possible theme; in fact, regimentation is precisely what we counsel against at any level. However, we will continue to make these suggestions in the future, as we have in the past, as points from which the individual's own creative talent can move in many interesting directions.

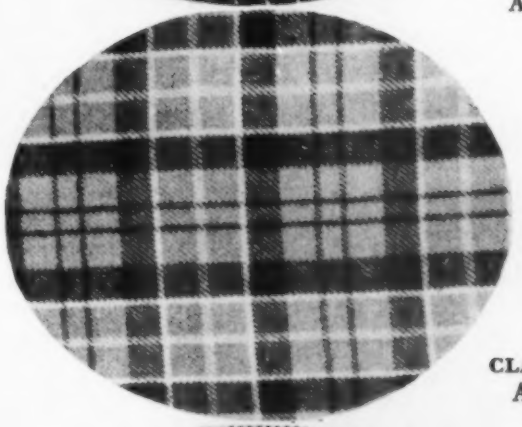
In passing we should like to make brief comment on the manner in which several of our suggested design themes have fared. At a time when mills and converters found themselves burdened with excessive inventories of plain goods, those companies which applied the designations of Stained Glass Colorings and Van Gogh hues fared rather well in moving their goods at the consumer level. The industry-wide promotions of Clan Tartans, District Checks and Paisleys require little comment; some companies did well, others did superlatively well with these promotions . . . all in proportion to the amount of creative energy they applied to their interpretations, their merchandising and their promotion of the finished products.

* * *

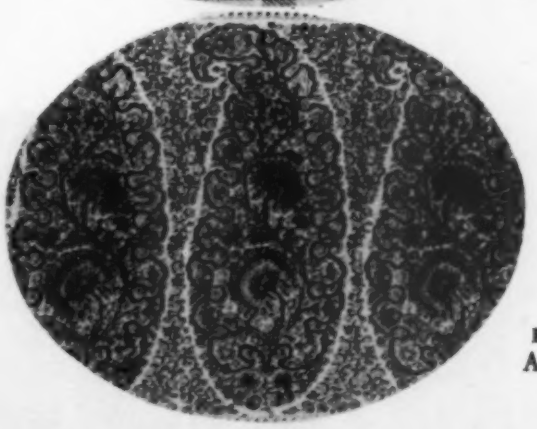
Is the consumer already tired of such promotions? We believe not; in fact, quite the opposite, as is being evidenced daily by the success which marks the introduction of new *ideas*. If the individuals within each company who are charged with Creative Thinking will bear in mind at all times that the public no longer buys textiles by the pound, and that the profit aspect of a company depends upon its ability to merchandise *ideas*, we believe they will find the future of the textile industry at least as bright as during any of the war years. *(please turn the page)*



DISTRICT CHECKS
A.F. No. 10



CLAN TARTANS
A.F. No. 14



PAISLEYS
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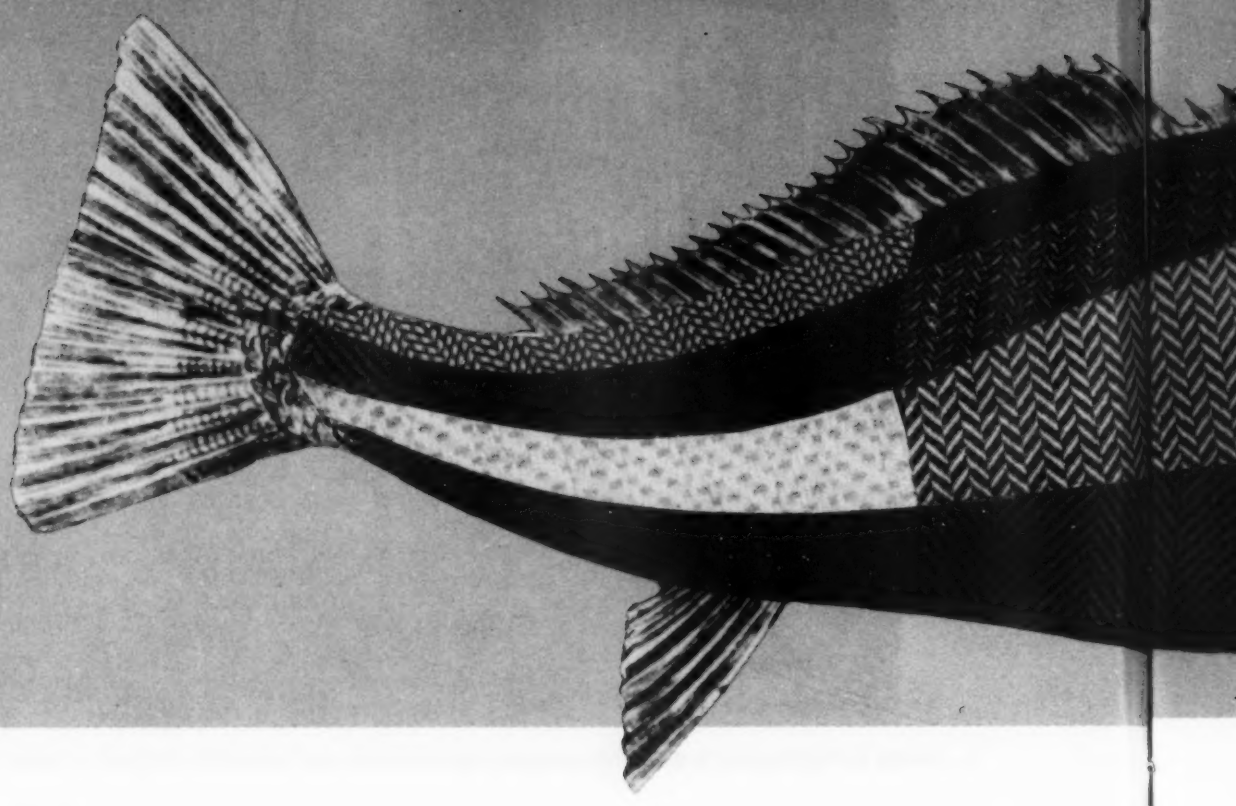
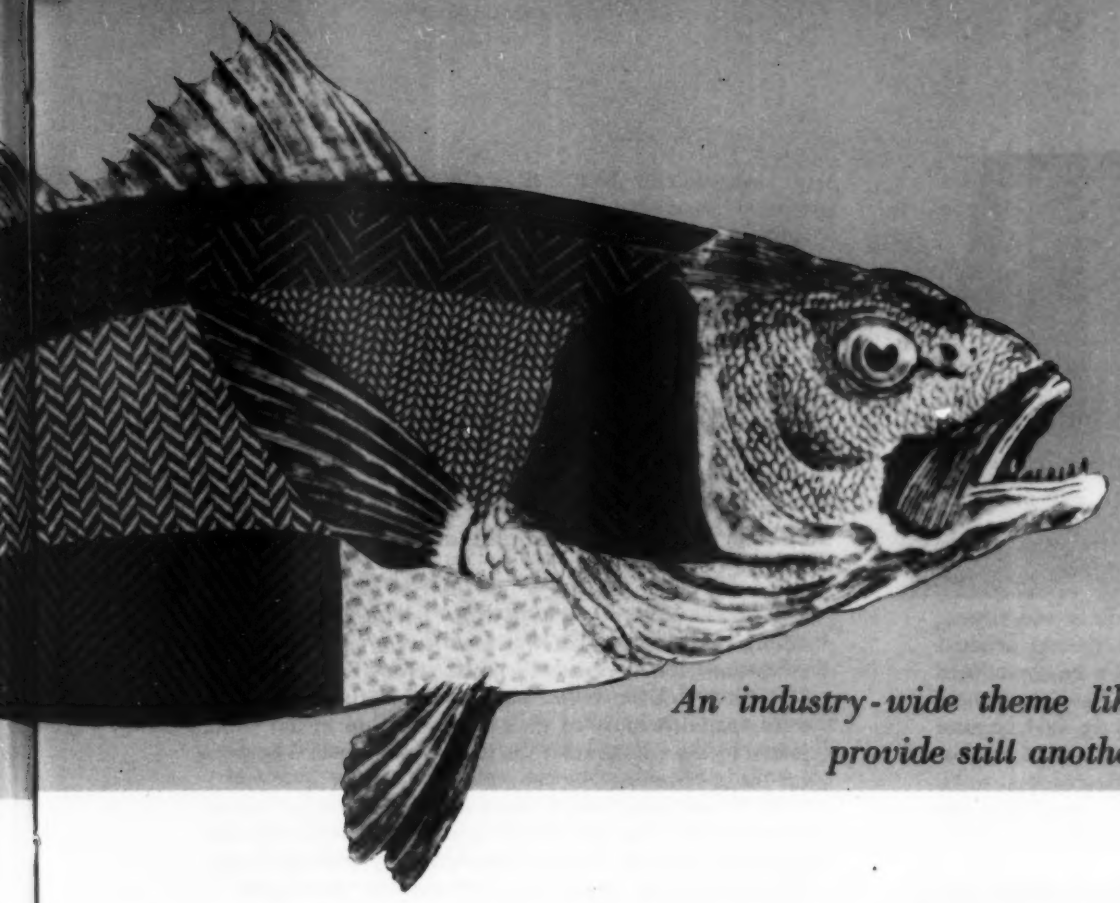


What do fish, poodle dogs and a bizarre circus equestrienne have to do with creative starvation in the textile and fashion industries?

TOULOUSE-LAUTREC. *There is no more colorful personality in modern painting than the French dwarf-painter Toulouse-Lautrec, whose twisted form and disturbed psyche gave birth to some of the most fascinating art of his period. With ever-mounting public interest in his work, with a torrent of publicity on his extraordinary life scheduled to appear during the coming year, Lautrec can provide the fashion industries with a host of inspirational themes. As one example, American Fabrics suggests the group of warm, brilliant colors used by the artist in his famous music-hall and circus lithographs.*



An industry-wide theme like herringbones can help to provide still another answer to creative starvation.

Superficially there is little of common interest; in a sense one might almost be tempted to say that the appeal is to different senses. And yet, as has been repeatedly proved during the past few years, one must often look far afield to find ideas which properly belong at one's feet, so to speak. The word creativeness, as we propose it to the textile designer, embraces far more than pure originality; there is much of valid worth in already established forms, albeit remotely removed from fiber, fabric or fashion, which we can draw upon . . . and we deem it as creative to *derive* from these forms as to originate from the concentric world of textile art or construction.

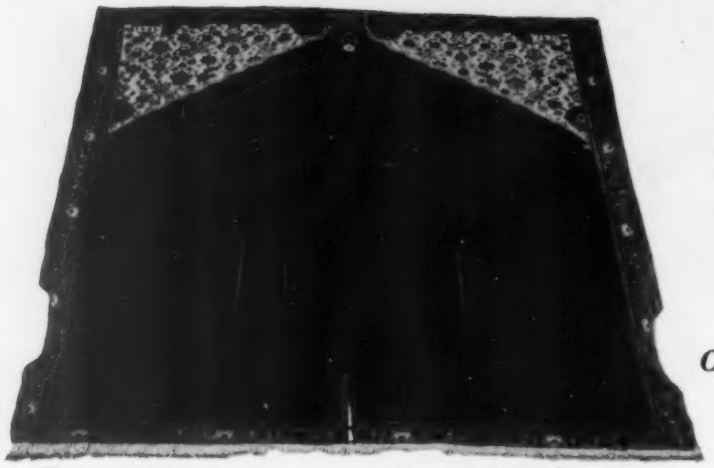
Certain individuals, whether by nature or through training, are somewhat more highly sensitive than others to suggestion from outer sources; and this quality is easily noted in their work, in the form of colorings, designs or an appeal to the important tactile sense. When something has survived in popular appeal through many years or centuries, such as herringbone, there is always the assurance that it possesses a quality worthy of perpetuation; when a colorful theme or idea strikes public fancy, it is *how* the individual designer or technologist applies it to his particular work which is the determinant of its effectiveness.

Please give careful study to the three suggestions offered on these pages, not as polished and packaged ideas ready to be flung full grown into the market place but, rather, as an indication of directional thinking from which may be developed new textiles of interesting as well as profitable potentialities.

WHAT CAUSED YOU TO TOUCH AND EXAMINE THIS SAMPLE OF TEXTURED PAPER? WAS IT NOT BECAUSE YOU FOUND ITS TEXTURE QUITE UNUSUAL AND INTRIGUING?

FLUBBY

TEXTURES. *To an industry which is so greatly dependent on newness and excitement to provide additional volume, the creative possibilities existing in textures cannot be overlooked. Whenever and wherever our leaders in the field of fashion fabrics have created ideas with genuine textile interest, the results have been extremely gratifying. Can we honestly say that the full potentialities of this intriguing phase of the fashion fabric industry have been fully explored?*



ORIENTAL RUGS ARE WOVEN IN AMERICA, TOO

Connoisseurs of oriental rug weaving conduct lectures and demonstrations on this ancient art of the Near East

THE WEAVER OF ORIENTAL RUGS is a painter and a poet. He adapts designs hundreds of years old to make original patterns and yarn pictures of his own. Or he reproduces the old patterns with absolute fidelity. In some instances he uses the designs for love of their beauty, and because they fit in with his plan. In others, he has in mind the history and symbolism of the flame cones, the rosettes, trees, vases, meanders and flowers which ancient weavers wrought into their rugs, prayer rings, tapestries, and even saddle blankets.

Weaving an oriental rug is a very different process from that of hand-weaving a flat fabric. The latter is accomplished by using a shuttle to run weft threads across a warp. The oriental is also made on a warp, set up in similar manner. It has a weft as well. But in it the web of warp and weft serves as a base on which to knot yarn to form a nap. Making a rug is a process of knotting, clipping, and inweaving of weft threads, then beating down each row with a comb. Pattern is achieved by the choice of colors and their knotting into the rug.

Oriental Rug Weaving in America

This country, too, is fortunate in having a few weavers of oriental rugs, usually hobbyists, who came here from oriental countries and who retain the urge to create on the loom. They in turn teach the craft to those of their children who show interest. Such a rug creator is Mrs. Marcig Manougian, Portland, Oregon.

Years ago, Mrs. Manougian's ability to create oriental rug patterns literally meant life to her, not merely an absorbing pastime. That was back in her birthplace, the Armenian city of Sivas, during the Turkish massacre of 1895, in which her father was killed. She and her mother were spared because of their craftsmanship at the loom, prized by the village ruler. So they became special weavers for the government.

In Sivas, nearly every home has a loom, some two or three, and children learn early to make finely tied rugs and tapestries that are the decorator's *all* in Oriental lands. Mrs. Manougian began weaving when she was eight. "I did not work the entire rug then," she hastened to explain. "My mother, Mikrooki Kirishian, set up the warp on the upright loom, and I tied on the nap, learning to make the old patterns." Mrs. Kirishian, Marcig, and her two sisters wove for the palace of the governor in Sivas, where they were recognized by judges as master weavers. And there for the collection of the governor, she wove five portraits of noted Americans, among them Abraham Lincoln, George Washington, and Teddy Roosevelt. These were woven over a period of years, and won medals of recognition from the governor. Made on a plain background, they were five feet by seven, and framed with wreaths. There was some variation in their construction, but very little. Consider that she had only pictures to guide her, and that she had to enlarge the likenesses to scale as she worked, and it will be seen that she is indeed a master weaver. The governor in 1926 or 1927 lent these rug portraits to Cartozian Brothers, at whose shop they were on display for a time, but since the war, Mrs. Manougian has lost track of them. She feels assured that they were not destroyed, since oriental people, regardless of nationality, appreciate true artistry in hand-woven rugs.

The Tests of Fine Rug-Weaving

Mrs. Manougian's creations pass superbly all of the tests for the proper evaluation of oriental rugs: number of knots to the square inch, fineness of material, richness of color, detail of design, and age. And we can be assured that the gifts she makes to her loved ones will be treasured, so that in time they will be heirlooms handled as reverently as the antiques of her uncle's collection. His are kept in a vault, while hers will mellow with careful use. The tools she uses are scissors, pocket knife, and a steel comb weighing about five pounds, made in the old country for rug work. There it is called a kerket. Equality of pressure with the comb is necessary to insure an even fabric.

We can appreciate the monumental patience required, when we realize that her rugs are tied with from 325 to 375 knots to the square inch. Each knot means that she must select the color of yarn, draw the strand of wool or silk (usually wool) through the warp threads, tie the knot,

and cut each separately as it is tied. She averages three to five months to weave a two-feet-by-four piece, depending upon the fineness of yarn. The rug on the loom pictured has 325 knots.

The Kerman Technique

The rugs she weaves are called Kerman, after the district in Persia, since the designs, texture, and manner of knotting is like theirs. Kerman rugs are tied onto a cotton warp with the Sehna, or Persian knot, as opposed to the Ghiordes, or Turkish knot. The Sehna knot produces a close, fine, even and velvety surface, and is a little more difficult. It is tied so that from every space between two warp threads one end of pile yarn protrudes; that is, one end of cut yarn is in each square. The Ghiordes alternates: two ends, then two threads of warp, so one end from each of two knots come together in a square, then one square of warp and woof with no ends. Kerman rugs have exceedingly closely trimmed pile. Rose is the predominant shade. The designs are sometimes termed *thought bouquets*.

So rose is Mrs. Manougian's choice color, and floral designs her favorite, although she does not adhere entirely to either, using green, blue, and gold also. The pillow top at her knee in the picture is a warm shade of chestnut brown. And the design on the loom is one known by many names: the pear, since it resembles that fruit; the palm leaf; the river loop; the crown jewel; and the cone. The cone is the flame symbol, worshiped by the followers of the Zoroastrian faith. It is of Persian origin, and belongs peculiarly to the Kerman district, to which the ancient fire-worshipers were banished by Mohammedans. It traces back to worship of the sun. Although Persian in origin, it has also been adapted in different forms by other oriental weavers. Designs are frequently repeated in her rugs, but patterns are always originally created.

Choice of Wool Yarns

She uses Persian wool, imported through New York. One may wonder at this roundabout way of securing it. Why not buy domestic yarn, easily obtained? Ah, there is one of the important differences between oriental and domestic rugs, explaining why an oriental, properly made by a craftsman, mellows with age and outlasts a lifetime.

Persian wool is known as being superior to all others for rug weaving. And only the softest of this choice wool is selected. Dyes made from an incredible variety of animal and vegetable materials are extracted by color makers who, among primitive people, were considered gifted beyond all others of their clan. They treasure their secrets and hand them down from generation to generation of dyers. Dyes thus skillfully extracted are introduced into the wool with great care, so as to secure absolutely fast color, and to preserve the yarn fibers.

In Sivas, sizes of the rugs she made varied greatly. Here the size she can weave is limited by her loom, which may be called a hobby loom, on which two feet by four feet is the largest she can turn out. Most of her weavings, then, are really pillow tops, not rugs. The loom was made to order, an exact copy of an oriental loom. She sells none of her rugs; her loom is for her pleasure, and on it she occupies herself creating lovely designs for her children and her grandchildren.

Her uncle, Aram Cartozian, Sr., frequently gives benefit lectures on oriental rugs and the lands from which they come, proceeds going to scholarship funds and similar causes undertaken by clubs, lodges and sororities. In 1924, Mrs. Manougian began to demonstrate weaving at these lectures, adding reality to his talks, and showing something of the manner in which the lovely antiques in his private collection were created in another day, since neither loom nor method has changed much through the centuries.

"She can weave so fast you can't see what her hands are doing," Mr. Cartozian tells the audience, "but she will do it for you in slow motion, to give some idea of her method." To those who watch, however, there is nothing slow about her rhythmic movements, in which she makes each step count. And in her selection of colors from the wicker basket of short strands of woolen yarns, there is rarely any hesitancy in choosing this, rejecting that. She works constantly with a small knife in the palm of her right hand, held so as to economize motions, cutting each thread after it has been knotted in the intricate knot so constructed that pulling only makes it more secure. The left hand chooses the yarn, and with the fingers weaves it into the warp. The colors spread out for her are in themselves satisfying to the beauty lover: blues, maroons, magentas, winter pink, rose and, to blend them together, neutral tints.

This team of lecturing uncle and weaving niece passes on to many spellbound audiences something of the rich heritage from a people who wove tirelessly into their rugs their religion, their traditions, their artistry. And always, illustrating the talks, are the matchless rugs combining exultant beauty and a message of nostalgia. — MABEL OLSON

MOSES AND THE SHEPHERD

Moses saw a shepherd by the wayside who was saying: "O God who choosest whom thou wilt, where art Thou, that I may become Thy servant and sew Thy shoes and comb Thy head? That I may wash Thy clothes and kill Thy lice and bring milk to Thee, O worshipful One. That I may kiss Thy little hand and rub Thy little foot, and when bedtime comes I may sweep Thy little room."

Moses said: "Man, to whom is this addressed?"

The shepherd answered, "To that One who created us, by whom this earth and sky were brought to sight."

"Listen!" said Moses, "you have become very backsliding — indeed you have not become a true believer but an infidel. What babble is this — what blasphemy and raving? Stuff some cotton into your mouth! The stench of your blasphemy makes the whole world stink! It has turned the silken robe of religion into rags! Shoes and socks are befitting for you; but how are such things right for one who is a Sun? If you know that God is the Judge, how do you dare to indulge in this familiarity and doting talk?

"To whom are you speaking? To your paternal and maternal uncles? Are the body and its needs among the attributes of the Lord of Glory? Hand and foot are terms of praise in relation to us, but in relation to the holiness of God they are pollution."

The shepherd said: "O Moses, thou hast closed my mouth and burned my soul with repentance."

* * *

God uses this occasion to teach Moses that it is not the outward form of worship but the inner desire which is all-important:

"Thou has parted My servant from Me. Didst thou come as a prophet to unite, or to sever? I have bestowed on every one a special way of action; I have given to every one an individual form of expression. I look not at the tongue and the speech; I look at the inward spirit and the state of feeling. I gaze into the heart to see whether it be lowly, though the words uttered be not lowly. Because the heart is the substance, speech is only the accident; so the accident is secondary, the substance is the real object. How much more of these phrases and metaphors? Light a fire of love in thy soul, burn thought and expression entirely away! O Moses, they that know the conventions are one sort; they whose souls and spirits burn are of another sort."

* * *

When Moses heard these reproaches from God, he ran into the desert in quest of the shepherd.

Pushing feverishly on following the footprints of the man, and scattering dust from the skirt of the desert, at last Moses overtook and beheld him.

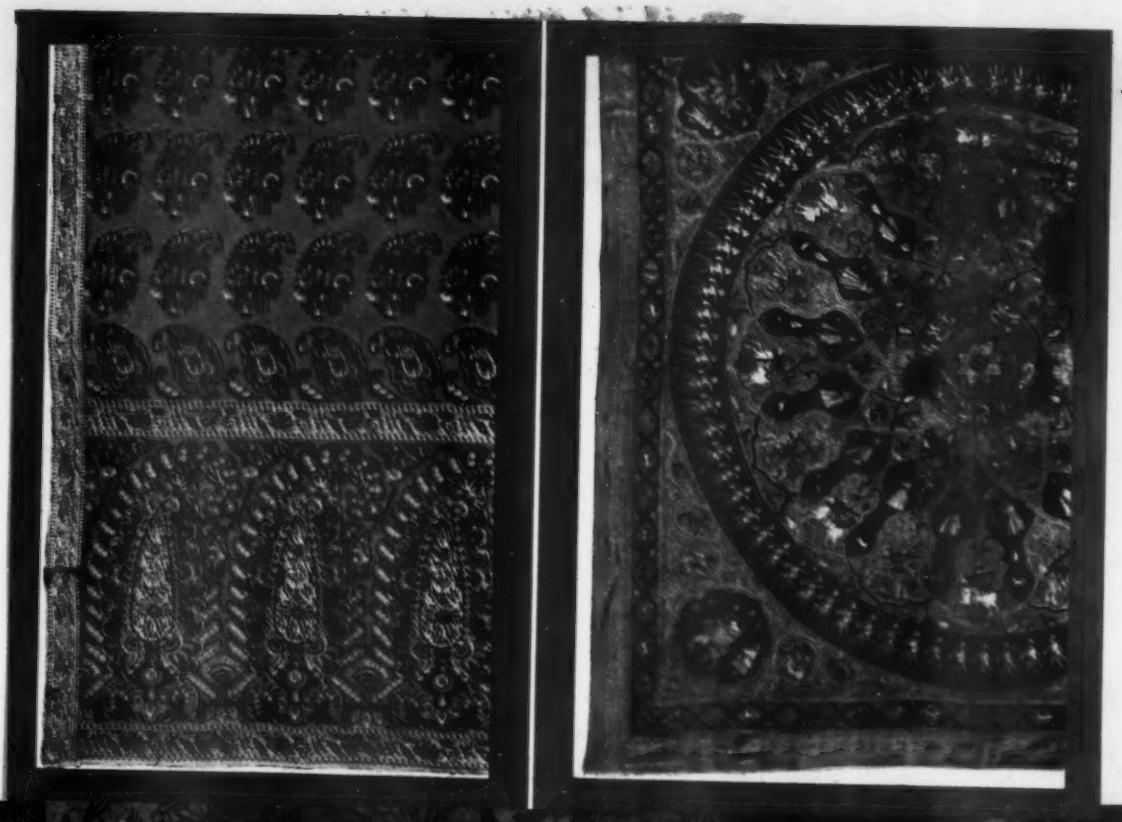
The giver of glad news said: "Permission has come from God. Do not seek any rules or method of worship; say whatsoever your heart desires. Your blasphemy is the true religion, and your religion is the light of the spirit; you are saved, and through you a whole world is in salvation. O you who are made secure by God, go loose your tongue without regard for what you say."

The shepherd said, "O Moses, I have passed beyond that: I am now bathed in my heart's blood. I have passed beyond the farthest bourn, I have gone a hundred thousand years' journey on the other side. Thou didst ply the lash, and my horse shied, made a bound, and passed beyond the sky."

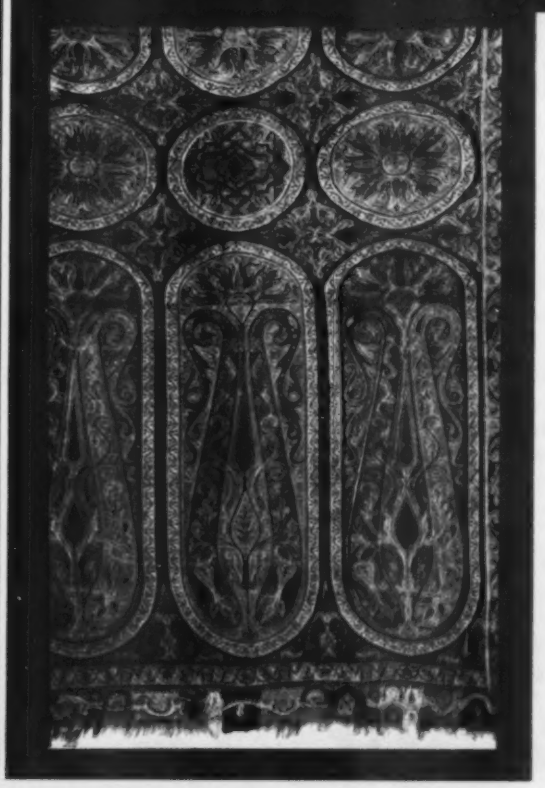
* * *

Take good heed! Whether you speak praise of God or thanksgiving, know that it is even as the unseemly words of that shepherd. Though your praise is better in comparison with that, yet in relation to God it too is maimed and feeble. How often will you say, when the lid has been raised, "This was not what I expected."

FROM THE MATH'NAWI



Timeless Paisleys



The four original Kashmir Shawls above are reproduced by courtesy of The Calico Museum, Ahmedabad, India

From original Kashmir shawl, courtesy Boston Museum of Fine Arts

The Mogul Emperors wore on their turbans a jeweled ornament known as a Jigha, shaped like an almond or pine cone. A Kashmiri weaver used the form of the Jigha with a floral enrichment on a scarf for the Emperor Babar (King of Kohtan, 1494), descendant of Genghis Khan and Tamerlane, and the Jigha then became a fashionable design in all shawls and scarves.

The origin of the pine cone motif is attributed to Chaldea whence it spread to India and Persia, appearing also in the arts of Arabia and Egypt. It is found in the greatest possible variety of forms — large, small, in outline, filled in with smaller pines or floral sprays, inclined, upright, separate or intertwined, in bud or in blossom.

HISTORY and WEAVING of PAISLEY SHAWLS

Indian shawls had been worn in the Russian court previous to Napoleonic times, but they did not appear in Western Europe until Napoleon sent his expedition into Egypt in 1798-99. The French officers sent back wonderful shawls from India, Persia and Turkey and they became the rage from Scandinavia to Spain. Josephine is said to have owned 300 to 400 shawls, costing up to 20,000 francs each. These could be worn as a veil flowing from the head, hung from the shoulders, knotted around the waist like a sash, or swathed around the body like a skirt. Ladies took lessons in the art of posing in and draping the shawl.

The true Kashmir shawl is a combination of needle and loom work. The threads of the weft, instead of being one continuous line from side to side, are sewed in by the weaver in short lengths, working with several needles or shuttles of different colored yarn, as required by the design, so that the single line of weft may be broken up into hundreds of little

Detail of embroidery from shawl opposite

lengths of the different colors composing the pattern. The Kashmir shawl is instantly recognized by the tangle of intertwined threads covering the entire surface of the wrong side.

The Paisley shawl, made at Paisley in Renfrewshire, Scotland, was a successful attempt to reproduce on the harness loom the effects which in the Indian or Kashmir shawl were produced by needlework. The designs were adapted first from the Turkish geometrical motifs, later from the Indian and Persian pine and floral patterns. The various sections of the especially fine warp were dyed separately to imitate the many woven and patchwork borders of the Kashmir shawl. The warp thus formed a many colored fringe.

The Paisley shawl, while frankly imitating the original fabrics laboriously woven in Kashmir, may be easily distinguished by the more conventionalized designs and the absence of a rough tangle of threads on the wrong side. In the Paisley, every weft thread was carried across the full width of the shawl, appearing on the right side only where the pattern demanded, and on the wrong side as a long or short undershot. The continuous weave of the Paisley made it softer than the interlocking weave of the Kashmir originals. The design layout of a Paisley shawl often required four months; the actual weaving only a week.

The yarn for the Paisley shawl was specially prepared. The finest, used in the warp which must be strong, consisted of a strand of fine silk around which was spun a covering of fine Kashmir wool. This yarn was imported from Amiens, France. The woolen yarn for the weft came from Yorkshire. The dying of the warp required great skill and care. Between the variously colored ends the center would be dyed red or black. In some cases the warp from the side borders was placed in a special framework so that certain sections were left exposed and could be dyed a special color.

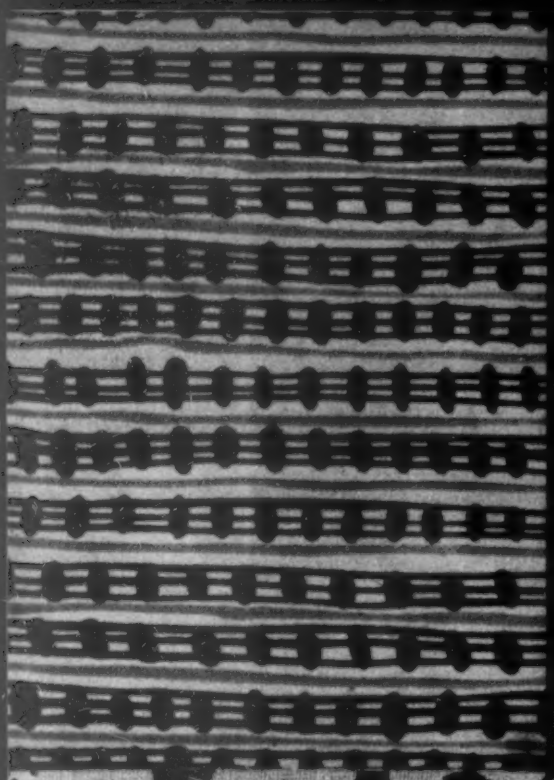
About 1845 several manufacturers began to produce a lightweight shawl with the design printed on the fabric. This idea came originally from Lyons, France and was followed by the introduction of printed silk, cotton and muslin shawls, called barège shawls, which were especially suitable for summer wear. Ever new and varied applications of the Paisley designs continued to be created from this time on toward their eventual establishment as a perennial fashion.

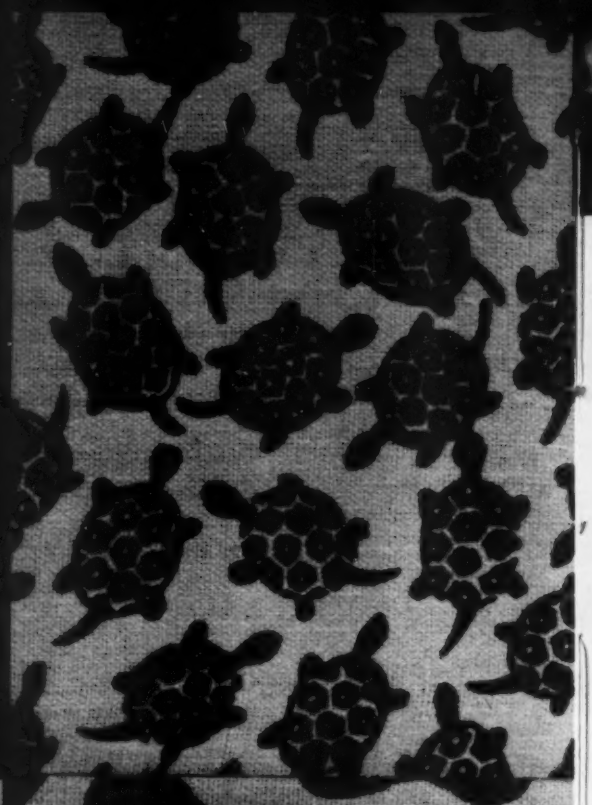
A Freehand Quality

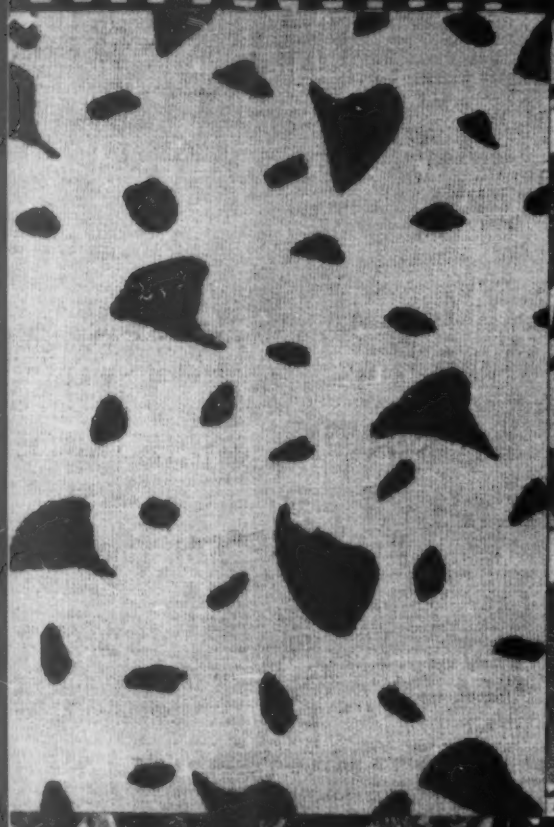
Characterises Designs

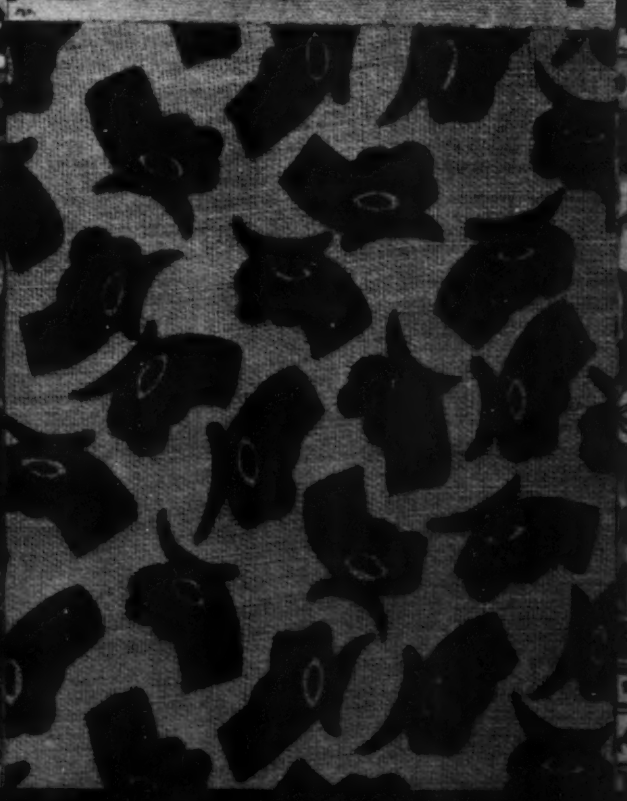
for Sportswear for

Spring 1952





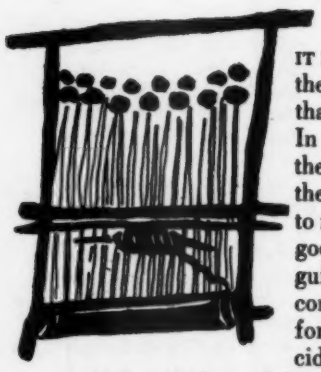




Fabric by MALLINSON

CREATIVE THINKING AT THE FIBER LEVEL

The deep-rooted lethargy of the dress industry receives a needed jolt through a new type of crepe sponsored by Tennessee Eastman



IT IS ALMOST axiomatic in business that the most dangerous type of goods is that which is classified as a staple item. In this category the manufacturer and the retailer are inclined to work along the lines of past history; they continue to manufacture large quantities of such goods, using previous experience as a guide to the quantity. Ultimately there comes a point at which the consumer, for one reason or another, suddenly decides that he has had enough of a particular staple, and that is the point at which the item ceases to sell at the retail level.

Whether this point has been reached in the life span of the traditional type of dress crepe; whether the hiatus in crepe dress selling is just another piece of evidence that the consumer buying trend is still limping along; or whether it is due to a combination of circumstances . . . the bald fact remains that neither manufacturers nor retailers have been able to move any sizable quantity of staple crepe merchandise for months.

Suddenly there has come a spurt of action, but through the introduction of a refreshingly different type of crepe. This crepe is different not only in the sense of construction, but in the many added qualities with which it is endowed; most important of all, it gives each distributor in the chain something new to talk about. The new crepe is no overnight development; in the laboratories of the fiber producer, and in the pilot plants of forward thinking weavers and converters, many experiments were conducted over a fairly long period to attain what is today a reality. But there is no question that it has been introduced at the proper psychological moment, and the initial reaction at all stages has justified the enthusiasm with which it was launched.

Tennessee Eastman refers to this new crepe as *Estrel*. The name is not limited to a single fabric, but rather to a broad group coming within certain construction bounds. Essentially the characteristics of the first Estrel crepe are these:

The fiber content is 80% acetate and 20% viscose rayon, with a novel method of using the acetate in both the warp and the filling.

The warp-wise stability, or its ability to recover from temporary added stress, is greater; this was demonstrated when an Estrel crepe was tested in a laboratory against fourteen other rayon crepes.

Under differing atmospheric conditions, an Estrel crepe has superior resistance both to sag and stretch, and adjusts itself faster; these are of course important factors in both the manufacture and wearing of bias-cut garments.

When it comes to wrinkle resistance and recovery, the Estrel crepes excel the usual types. In one phase of the tests, one sleeve of a bodice was made of an Estrel crepe and the other of a fabric similar in appearance; after seven hours' wear at a desk in hot and humid weather, the Estrel sleeve showed considerably less creasing than the other, and after hanging out overnight it was completely wearable while the other crepe needed pressing.

Dry cleaning tests indicate that Estrel crepes clean easily and that they suffer no appreciable shrinkage, loss of hand or damage to draping quality.

Because cellulose acetate is a naturally dry fiber, Estrel crepes possess a crispness and resilience which enable this type of fabric to work into garments usually associated only with wool crepe.

Finally, its thermoplastic quality gives Estrel dependable pleat-retentive qualities.

It must be kept clearly in mind that there is not just one Estrel, but that in addition to the various fabrics already available in the market, numerous new types will shortly be seen: lighter weight versions for next spring and summer, as well as deeper textures for winter. All will have the common bond of the Estrel method of combining acetate with other fibers, and as the dress industry finds greater stimulation in its daily business through the introduction of this new type of crepe, credit must again be given to Creative Thinking, here fostered by Tennessee Eastman. • *END*

FESTIVAL FABRICS

Textile Design in London's South Bank Exhibition provides a picture of trends in fabric furnishings for small homes.

The South Bank Exhibition of the Festival of Britain provided an interesting opportunity of studying the latest developments in fabric furnishings.

Though the exhibition itself contained a special textile section in the *Design Review*, it was actually the interior decorators' choice in special pavilions, such as *Homes and Gardens*, which gave an illuminating picture of future trends in furnishings.

One of the main objects of the Homes and Gardens section was that of demonstrating the many improvements in modes of living which can be accomplished in today's small apartment or house. The aim throughout was the creation of a cheerful atmosphere underlined by a practical note. This was apparent in the choice of window draperies and upholstery fabrics which radiated cheerfulness and a feeling of space in small areas.

The motifs on the draperies, whether woven or printed, had the decisive outlines and clear colorings of a modern painting which, together with the brilliant handling of color . . . in many instances the combination of several clear hard pastels in one design . . . was complementary to the lightwood furniture.

A further point in favor of the contemporary fabrics is that it affords the weaver-designer scope for utilizing the more durable types of yarns such as bouclé wool, linen gimps, slub cottons and rayons, that will stand up to the hard usage imposed on them where the divan cover does double duty as a sofa cover.

The most striking soft furnishings displayed were the jacquard weaves, exhibited in a wide variety of design. The curled wool covering was also most effectively used for the ingenious sofa with its sliding back which becomes the over-night bed.

Among the printed soft furnishings, a few traditional designs found their way into the general scheme, but only when the motif and coloring had a definite character in keeping with modern décor. The toile de jouy, for example, was shown in various guises, in terra cotta and grey colorings on linen as a window curtain; with grey and citron yellow motif on a white ground for glazed chintz chair coverings.

The happy choice of contemporary design throughout the fabric furnishings of the exhibition was an indication of changing taste in furniture; the trend for lighter woods and streamlined shapes is gradually weaning the choice in fabrics away from floral patterns to modern treatments of form and color.

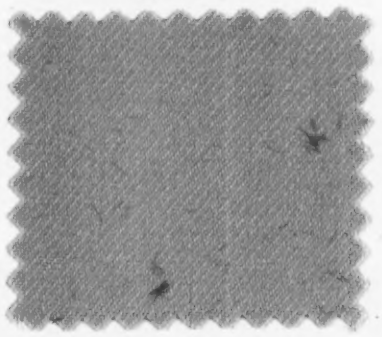
Spring Play in a T'ang Garden — HSUAN-TSUNG (1398-1435)

With leaves the peach-trees are laden,
The wind sighs through the haze,
And the willows wave their shadows
Down oriole-haunted ways.

As, passion-tranced I listen,
I hear the old refrain
Of spring's eternal story
That was old and is young again.

SSU-K'UNG TU (834-908).

Yarn-dyed Enka rayon taffeta with a striped and ribbed weave. By ONONDAGA



A new 14-oz. sports fabric of rayon and Vicara with a doeskin hand. By PACIFIC MILLS

Pebble-surface satin with a frosty look, woven of Enka rayon. By BIANCHINI-FERIER

All-spun washable rayon with surface interest for blouses and sportswear. By STERN & STERN

Worsted and Egyptian cotton. Sanforized, and as crease-resistant as worsted. By LANELLA

Knitted fleece of Orlon that possesses warmth without weight. By PRINCETON KNITTING MILLS

All-nylon tricot sheer with metallic printing. Washable and non-tarnishable. By WILLIAM WINKLER

A PROBLEM FOR THE WOOL INDUSTRY

The diminishing sheep population in this country indicates we must become more dependent on imports, lest wool face the fate of silk

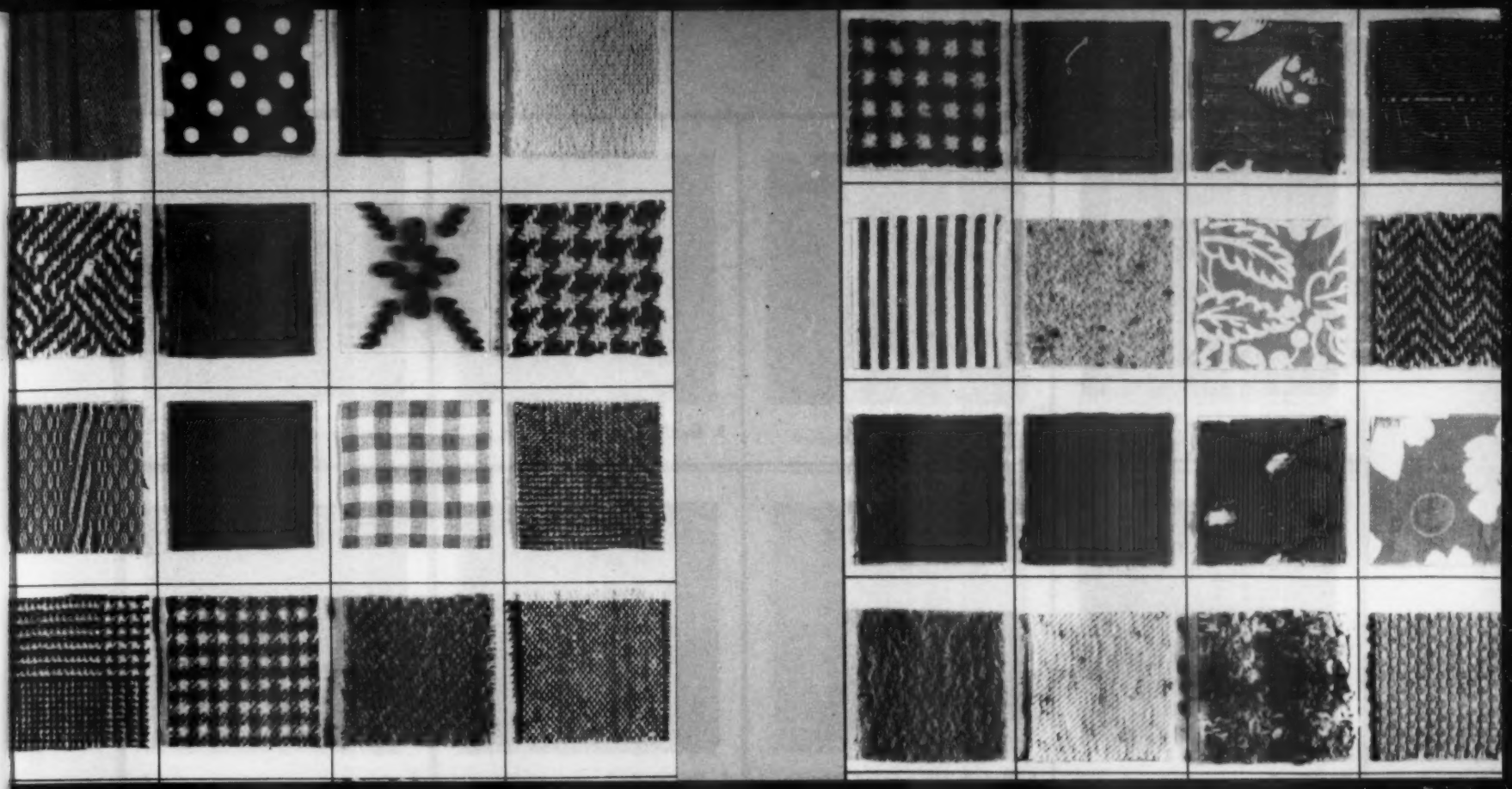
FOR A NUMBER OF YEARS it has been a calmly accepted attitude that the American wool industry must look to other nations for a sizable proportion of its supply. In a normal world, which means a rational balance between the supply and the ability to buy any commodity, there is little reason to worry over such a necessary procedure; while, as a nation, we would naturally prefer to keep our business at home, there is the offsetting advantage of creating international exchange for other American goods and manufactured products.

But this is no normal world in the political or economic sense. The state of tension which exists everywhere, the actual fighting in some quarters and the threatened extension of war to others, have created a background of potentially serious qualities for the American wool industry. The inordinately high prices of raw wool in Australia and New Zealand, and the manner in which other countries have thrust themselves into competitive bidding for the raw materials, have already placed American wool users at a disadvantage when they seek to supplement American supplies with raw wool from overseas. Now we find that still another disturbing element threatens to create even greater pressure on the future security of wool: the manner in which the American sheep population continues to shrink. In January, 1941, American breeders reported heards totaling 47,441,000 sheep. Ten years later, in January, 1951, they reported the sheep population had been reduced to only 28,065,000 head. This is a decrease of 41%, and since our standard of living had been stepped up during that decade to produce a greater consumer demand for wool, it means that whereas we needed to go outside our shores for only 39% of our wool needs in 1941, by 1951 we find that we need to buy fully 74% from foreign markets.

Thus wool suffers several vital sets of pressures, at a time when man-made fibers are making a determined effort to capture part of the traditional wool market. If wool remains higher in price than the masses can afford and if, at the same time, wool becomes relatively scarce, then we might witness a transition similar to that which marked the travel of silk from a volume to a limited fashion fiber.

While the foregoing is, at present, merely a possibility, it is still disturbing enough to suggest that steps should be taken immediately to forestall its transition to an actuality. One of these steps should be an effort to repopulate the American sheep herd; and the potential profit for the breeder is such that it appears to call for only a lucid education on the subject. In 1940 the sheep raiser received only 28¢ a pound for greasy wool; but in 1950 he received 57¢ a pound, which is an increase of 102%. On the basis of this yield, sheep raising should once more prove attractive to many individuals who forsook that field when it hardly paid them to go through the rigors and hazards of breeding and clipping; in addition, viewing the world wool situation appraisingly, it should be possible to encourage individuals who had never been in the sheep raising business to study the possibilities in view of the potential market within our own borders.

However, the problem is approached, the goal is clear: the American wool industry must take steps, now, to prevent even the remotest possibility that our wool supply should become restricted to only the top economic level. We do not predict that such a state will come to pass; but precautions instituted now could guarantee that it will never occur.



80 STANDARD FABRICS

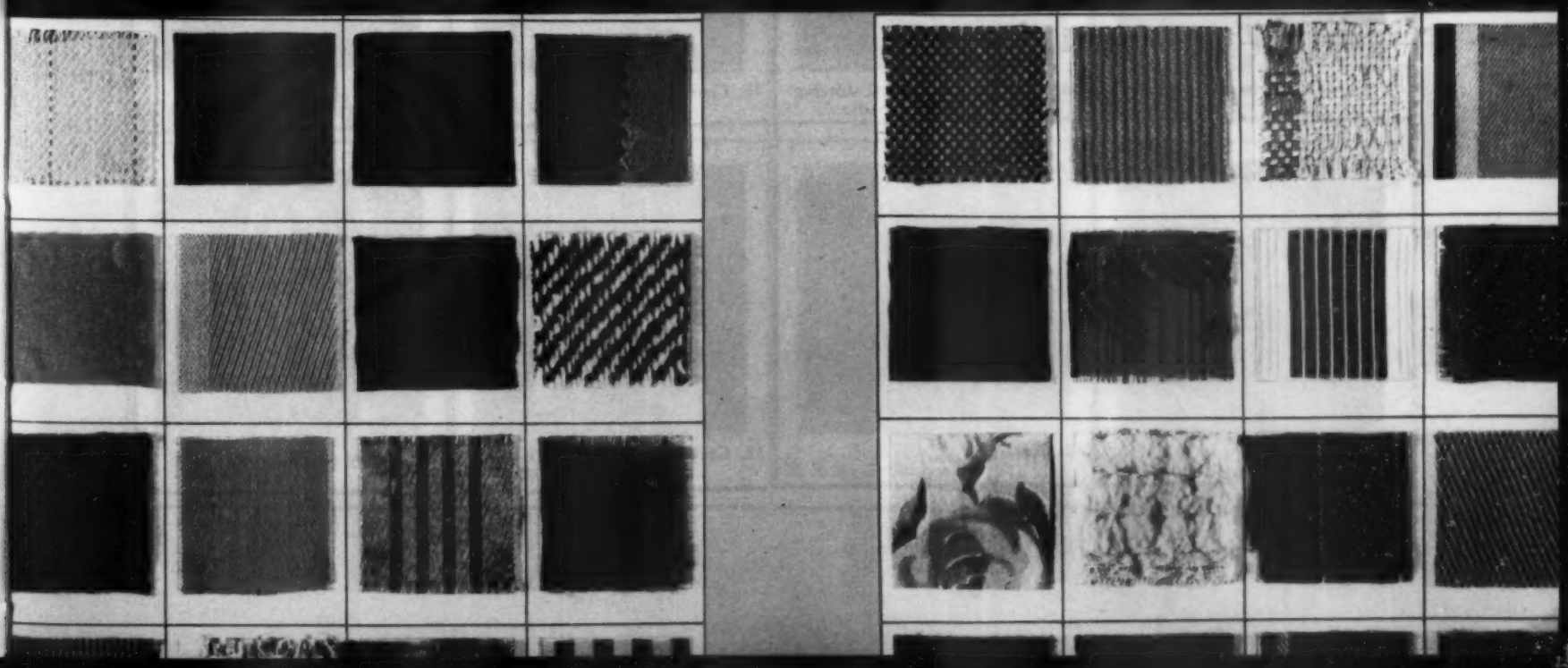
On the following pages the Editors have arranged, in handy alphabetical form, Eighty Standard Textiles, selected as a representative group of fabrics and fabric types in current popular use.

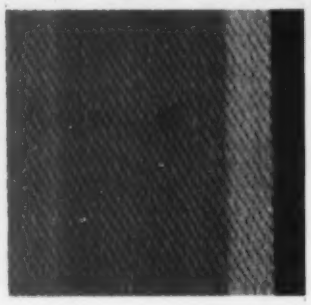
Each of the fabrics shown, whether for fashion apparel or household or industrial purpose, brings out a distinctive feature of texture, weave, finish or treatment.

The factors which govern the end use of any cloth are fiber (silk, cotton, wool, linen, any of the man-made fibers, or a blend of fibers), construction, color and finish. These are the major elements in all textile fabrics, apart from those of quality, weight and width. A fabric must further meet the requirements of the manufacturer and of the consumer with regard to hand or feel, firmness, drapability, luster, launderability, and other desired qualities.

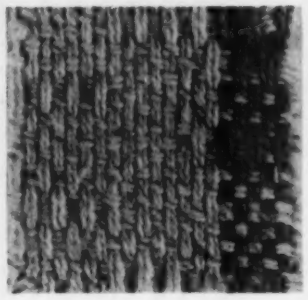
The group of fabrics shown has been designed to serve as a ready reference for recognizing particular fabrics and their outstanding individual characteristics.

Please turn the page

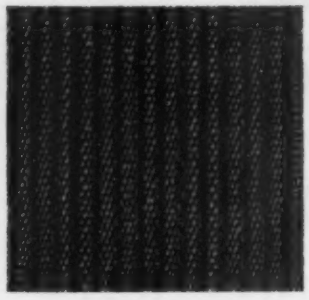




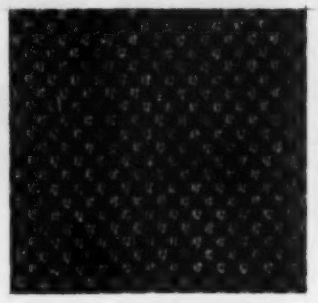
1. Awning cloth



2. Basket weave fabric

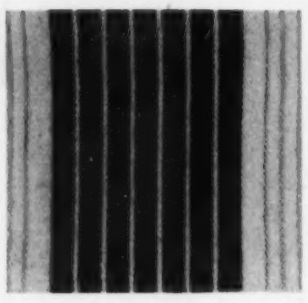


3. Bedford cord



4. Birdseye worsted

5. Bouclé



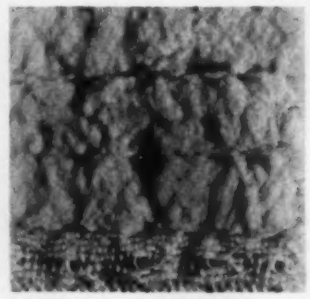
6. Broadcloth printed shirting

7. Brocatelle

8. Cassimere worsted

9. Cavalry twill worsted

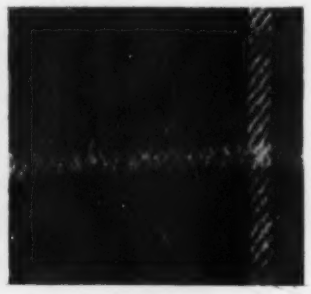
10. Chalk stripe worsted



11. Chenille

12. Chintz

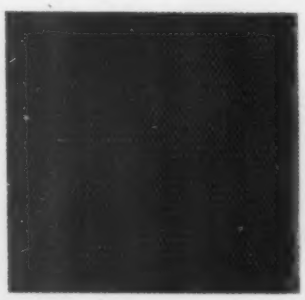
13. Corduroy, face and back



14. Cotton plaid napped shirting

15. Covert cloth

16. Crash cotton

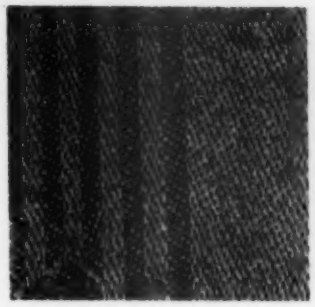


17. Crepe

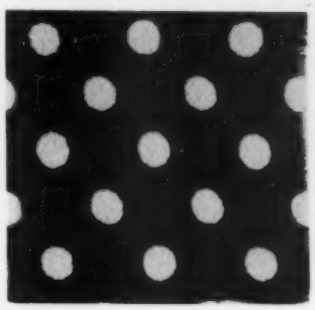
18. Cretonne

19. Cross-dye, acetate and viscose

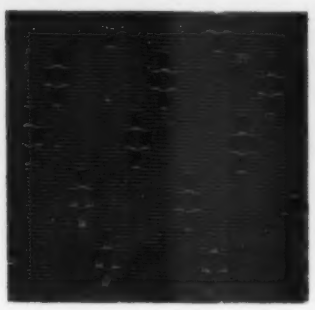
20. Curved twill drapery fabric



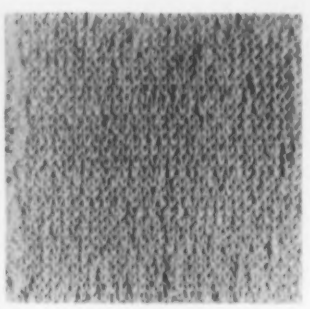
21. Damask table linen



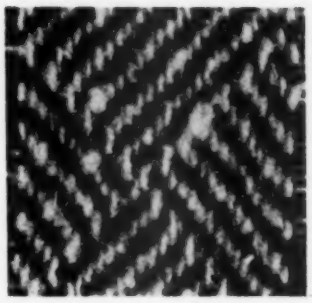
22. Discharge print



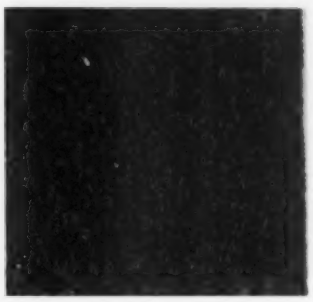
23. Dobby weave rayon



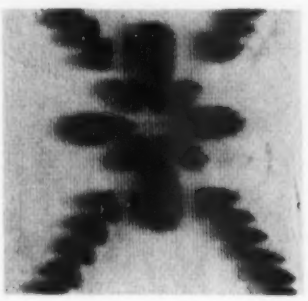
24. Elasticized girdle fabric



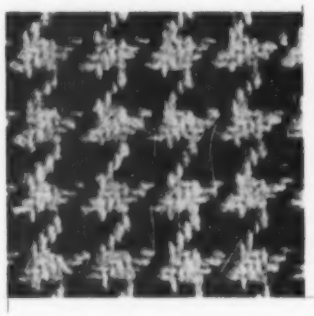
25. Entwining twill woolen



26. Flannel, wool

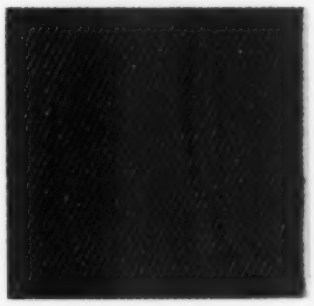


27. Flock-dotted cotton

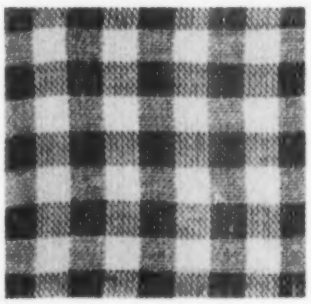


28. 4-and-4 check woolen

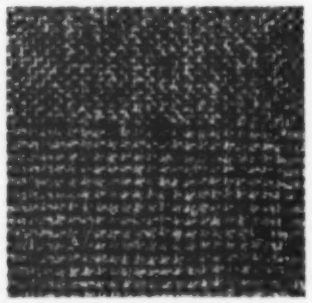
29. Furniture denim



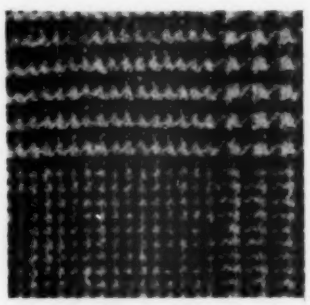
30. Gabardine worsted



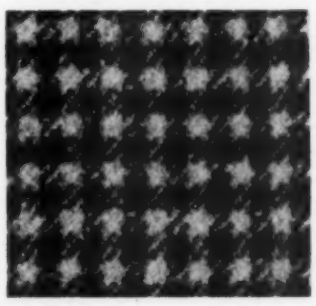
31. Gingham check



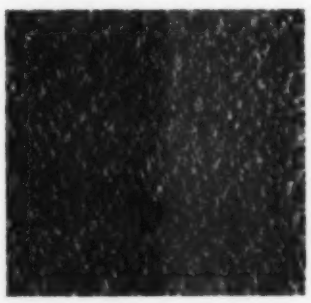
32. Glen plaid, split basket weave



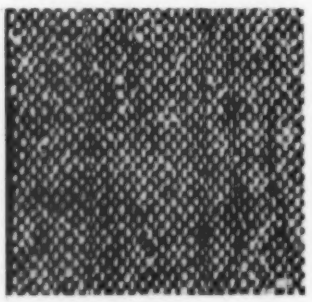
33. Glen plaid with overplaid



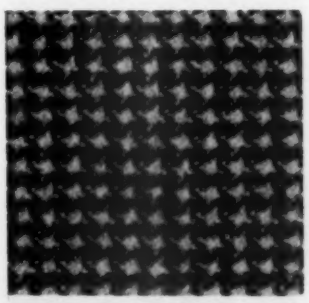
34. Gun club check



35. Heather tweed

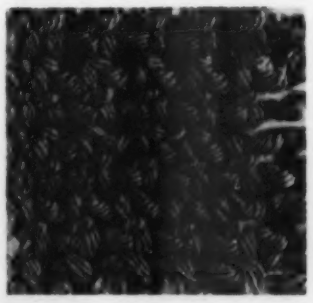


36. Homespun



37. Hound's tooth

38. Jacquard fabric



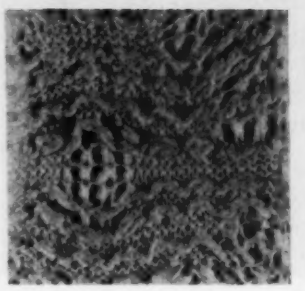
39. Leno or doup, loose

40. Leno or doup, compact

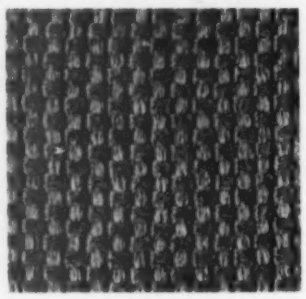
41. Mackinac cloth

42. Matelassé

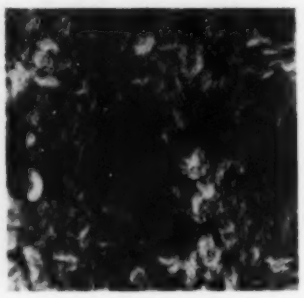
43. Melton



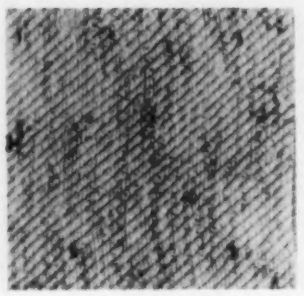
44. Mock lace, cotton



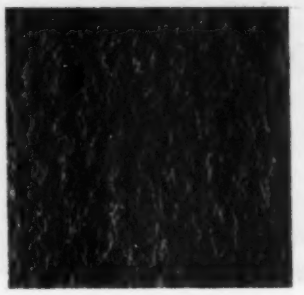
45. Monk's cloth



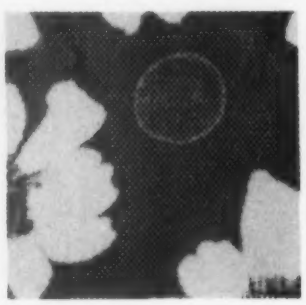
46. Novelty yarn coating



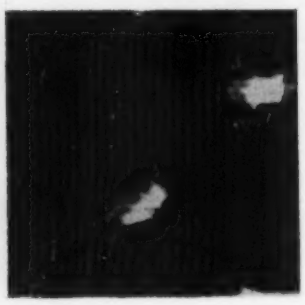
47. Novelty rayon dress-goods



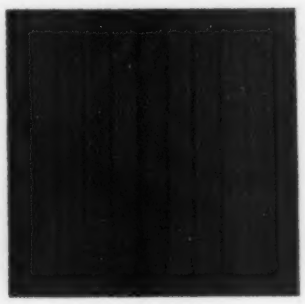
48. Overcoating, napped



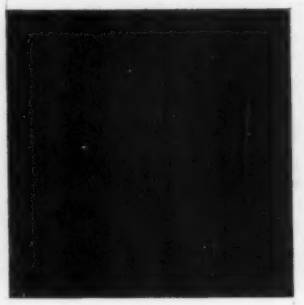
49. Pigmented print



50. Piqué, eyelet embroidery



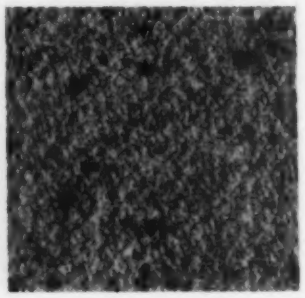
51. Piqué, wide wale



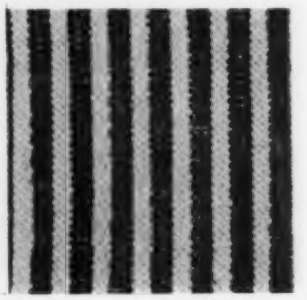
52. Piqué, waffle weave

53. Pointed twill woolen

54. Resist print



55. Salt and pepper woolen

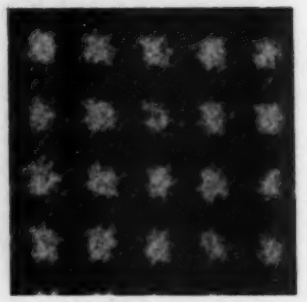


56. Seersucker

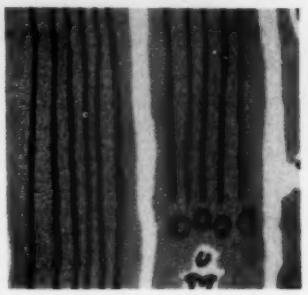
57. Serpentine rib

58. Shantung print

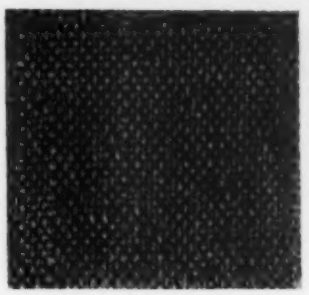
59. Sharkskin worsted



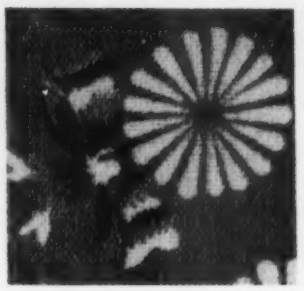
60. Shepherd's check



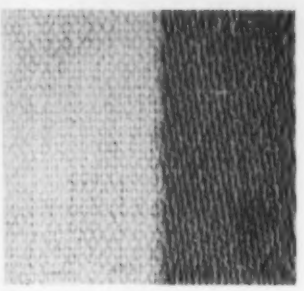
61. Silk screen print



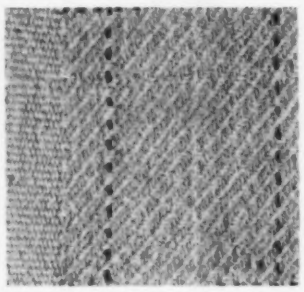
62. Spun rayon, linen finish



63. Spun rayon print



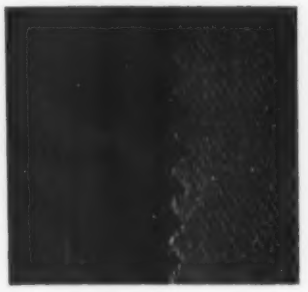
64. Striping, plain and satin



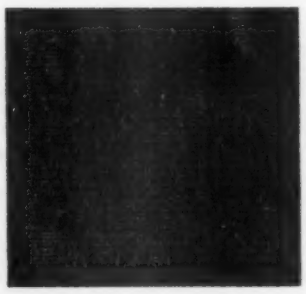
65. Suiting, acetate staple yarn

66. Taffeta

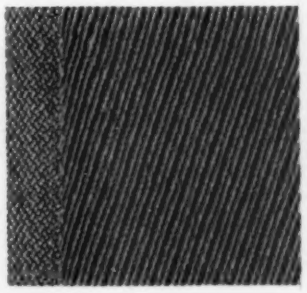
67. Taffeta moiré



68. Treated cotton, face and back

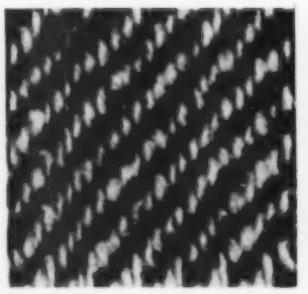


69. Tricot knit nylon



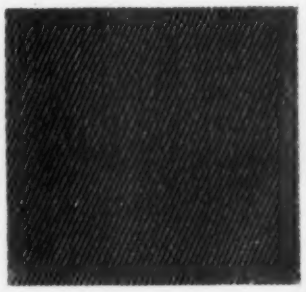
70. Tricotine

71. Tropical worsted

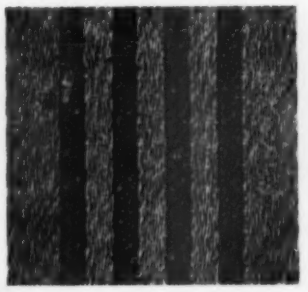


72. Tweed

73. Two-tone herringbone

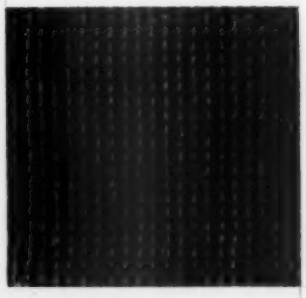


74. Union-dye, acetate and viscose

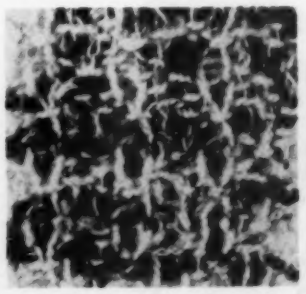


75. Upholstery, satin stripe

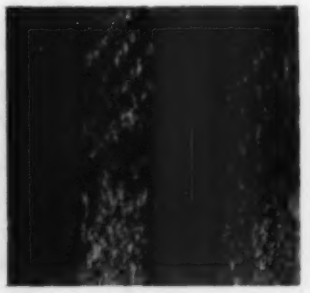
76. Velveteen



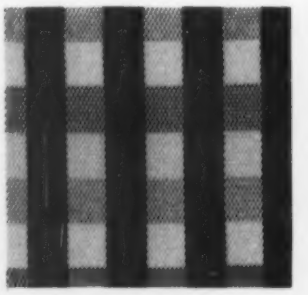
77. Waffle cloth, cotton



78. Waffle cloth, novelty yarn



79. Woolen plaid coating



80. Yarn or skein dyed fabric

VERMEER — *Girl with a Lute* *Courtesy The Metropolitan Museum of Art*

A great designer, like a painter, poet or musician,
must have a sense of rhythm, color and pattern

The Story of Celanese

The search for Perfection in the Laboratory,
for Stability in Economy and
for Service in Industry.

1919 — Original building of Amcelle plant at Cumberland, Maryland

Dr. Camille Dreyfus

The Story of Celanese

IN MORE THAN a casual sense, the story of the Celanese Corporation is the story of the American textile and fashion industry. It typifies, perhaps, the fundamental thinking, the vision, the force and the finesse which have helped to build this multibillion dollar industry. It is from companies such as the Celanese Corporation that stem the phenomena of many other manufacturing and distributing organizations; it is because of the infinite striving toward perfection . . . for profit, to be sure, yet nonetheless constructively for the nation as a whole . . . that at every economic level our people and our homes are better dressed than those of many another nation in the world.

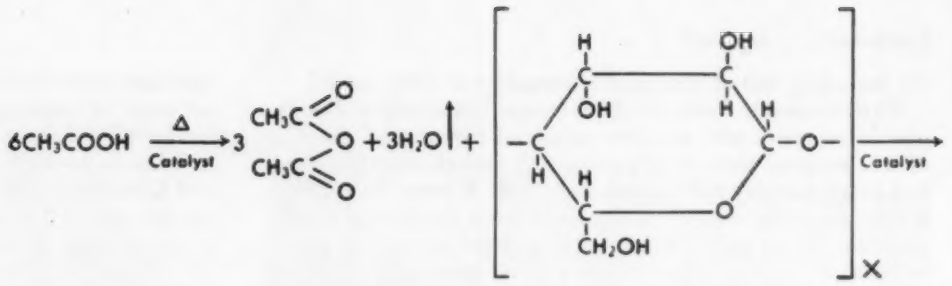
Much credit has been given, and quite justifiably, to the automotive, the steel and motion picture industries for having contributed to the broadening out of the American standard of living. Mass production of automobiles has given the resident of Connecticut an appreciation for Arizona or California climate, and in his travels he has spent moneys which have helped to raise the economic level across his route. The motion picture, and now television, have brought to many millions not only a primary view of more desirable ways in which to dress and behave and live, but a strong desire to emulate them.

Credit therefore belongs to both of these industries for their contribution; but in quite another manner and certainly to a most important degree, the textile industry has helped to lift the American economy high above that of any other nation, in a simple and direct way. If we were unable to offer to the populace the wealth of fine fabrics and fabric finishes which are available even at the bottom of the income ladder, could we have such a phenomenon as American retailing? If we removed these fabrics from the future, could we continue to employ so many hundreds of thousands of workers in American sewing plants? If the manufacturers could not continue to obtain a fast flowing supply of ever improved textiles at moderate prices, could our mills and allied factories continue to flourish?

When we add the value of finished goods to that of raw fabric materials, we find that the textile industry represents annually over $8,000,000,000 worth of business; only one, the food industry, contributes more to the gross national income. So in point of size alone, it is obvious that much of our population obtains its living directly from the textile world. But it is not because of this fact alone that those within this industry can gain a feeling of belonging to a great and vital business; to look about the streets of any community in any state and to observe how well dressed are the men, women and children of every economic stratum, to note the busy retail establishments where the national pastime of shopping is carried on . . . is to imbue one with the feeling that the American textile industry is truly an integral and uplifting force in our whole scheme of living.

What has led to the development of this enormous and beneficial giant in industry is more than the eye can take in from a balance sheet. The business of producing textiles in this country is almost as old as that of producing food; the earliest settlers brought their crude spindles, bobbins and looms to these shores and, as in England and France, some of them wove cloths which they sold to families which had little skill or time to spin and weave. This industry grew along with our population; but what are the factors which have made it grow to its present stature,

(please turn the page)



ACETIC ACID ACETIC ANHYDRIDE CELLULOSE

1951 — the Chemical plant of Celanese Corporation at Bishop, Texas

far exceeding that of comparable industries in other lands?

First, the innate American drive toward better technical methods. In countries with an older industrial background, there is often a resigned attitude of leaving well enough alone; here we find in all industry the constant urge to do it better. In no field is this truer than in that of fabrics. Review the history of the American textile industry through three hundred years and you will find that its most phenomenal growth commenced when we began to inject scientific and technical vision into the creation of fibers and fabrics.

Above all, the enormous increase in fabric sales came with chemicalization of fibers. While the foundation for today's huge chemical fiber industry was laid in the tiny laboratory of de Chardonnet, very little of practical industrial value was actually attained until shortly after World War I. At that time, in laboratories in Switzerland, Sweden, France, England, Italy, Germany and the United States chemical engineers were convinced that they could feasibly reproduce the working of the silkworm; but quite aside from the fact that their early products were too crude to justify widespread acceptance by the consumer, not much thought had been given to these early fibers beyond working out the problems of production.

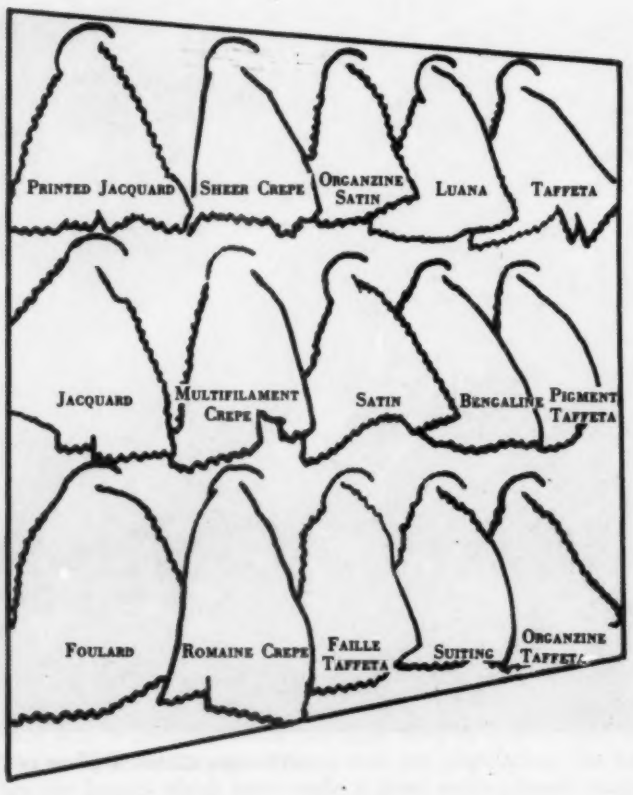
By slow stages the first fibers were brought before the public. Those whose memory goes back to the early 20s of this century will recall such names as *artificial silk, lustron, gloss,* followed by the general adoption of the name *rayon.* They will also recall the grossness of these first chemical fibers, and particularly their inability to absorb any but the most crass dye shades. Most businessmen would have thrown up their hands over the first consumer reactions; but not so Dr. Camille Dreyfus and his late brother Henri. Far from being discouraged, they picked up the negative reactions as a challenge because they felt that while the early forms of chemical fibers were unsatisfactory in a number of respects, chemistry and technology properly applied could open the door to a broad new field of business.

In the course of their experimentation the two brothers developed a number of commercially valuable formulae for application in industrial fields; but always they kept before them the problem of duplicating natural fibers not only in basic structural or in superficial aspects but at a cost which could bring fine textiles into the hands of the world's millions. As they received income from other works, they invested more and more money and time in chemical fiber research (a policy which is still a guiding force in the affairs of the Celanese Corporation; it spends at least $3,000,000 a year trying to find better ways to produce old products as well as ways to develop new ones!) and ultimately they came forward with the first of the widely acceptable fibers — a cellulose acetate filament.

By that time, however, the textile industry was somewhat afraid to touch chemical fibers. They were quick to admit that there was a world of improvement in the appearance, the hand, the flexibility, the dyeability of the acetate fibers; and yet the memory of the public's resistance to the early forms of rayon was still so fresh in their minds that they were not too prone to gamble that the new fibers could sell themselves. So Celanese set about proving to the consumer that a Celanese fabric was practical and desirable; and to the spinners, weavers, converters, cutters and retailers that a Celanese fabric would be salable. They set up their own mills to spin, weave and finish Celanese fabric, and the rest is textile history. Today we have the curious but quite logical picture of a great company competing with its best customers; but this can only be interpreted as indicating that since Celanese produces better than 50% of all acetate rayon fibers, their product must be extraordinarily fine to justify a competing mill in buying the yarn from Celanese.

To be quite sure, Celanese continues to operate its own weaving and finishing division for the sake of the profit; but there is still another side to this situation which should be understood — that is, the value of the Celanese fabric division to the entire fabric industry as both testing ground and inspiration. Whenever the research division comes up with a new type of yarn, an idea for a new fabric construction, a new type of finish, it is instantly put to practical test in the Celanese fabric division. Cloth is produced and made into suitable end products; these in turn are tested for the desirable qualities; finally they are given the conclusive test of consumer reaction. When Celanese is satisfied that the new product or new process is commercially feasible, it is thrown open to the textile industry as a whole. This is how, for example, the rayon sharkskin fabric which is today a staple item in all types of apparel came to be introduced; and many additional fabrics which are worn and used today by many millions of people had their origin through the Celanese chain of product-testing.

This is but one segment of the Celanese program of forward thinking. In the following pages we portray several more, including the ambitious and expensive investment which ensures a continuity of raw materials. All of this cannot do more than provide the merest index to Celanese thinking whch typifies the native American drive to do things better. It may well be, a thousand years from now, that future archaeologists and historians will select American Industry as the outstanding characteristic of the twentieth century; and if such be true, then certainly it will hold forth the operation of Celanese as representative of the best of our times. *(please turn the page)*



Some of the basic weaves containing acetate filament yarn and staple which have an important place in the apparel industry

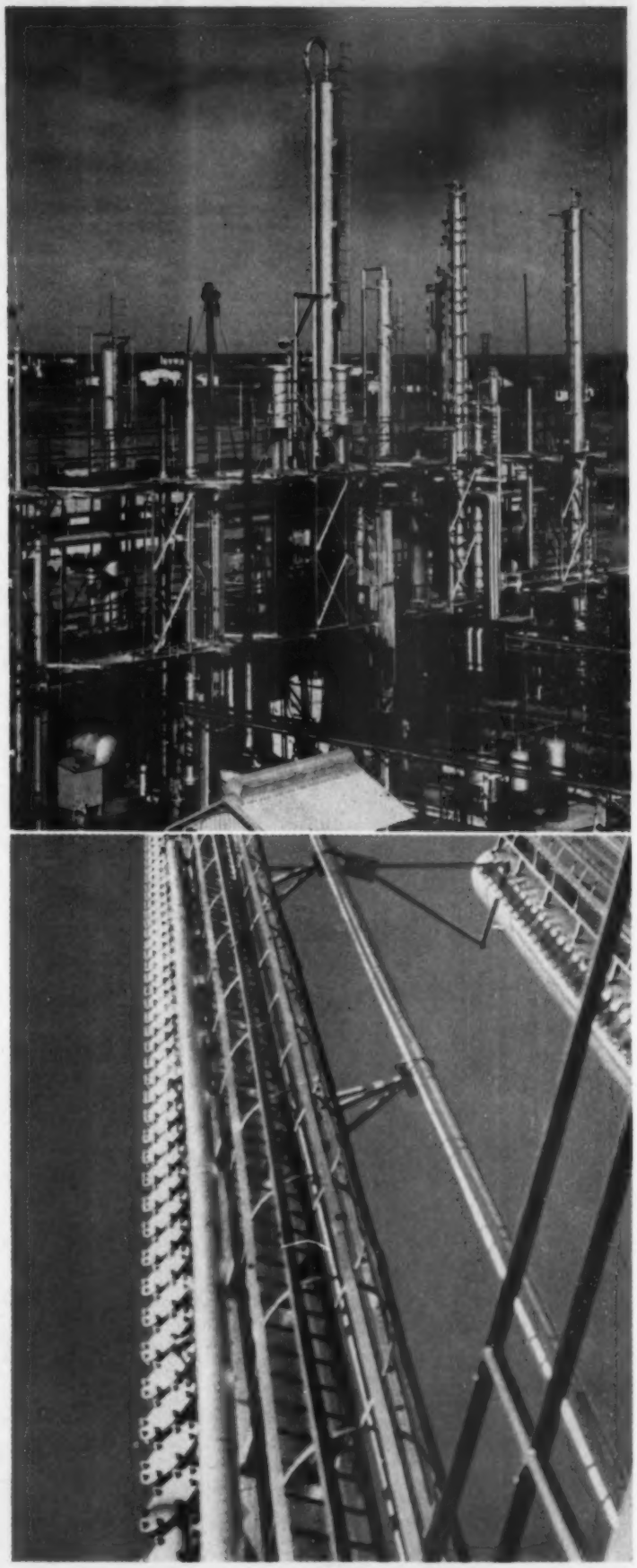
← Key on page opposite

Fractionating tower at the Bishop, Texas plant

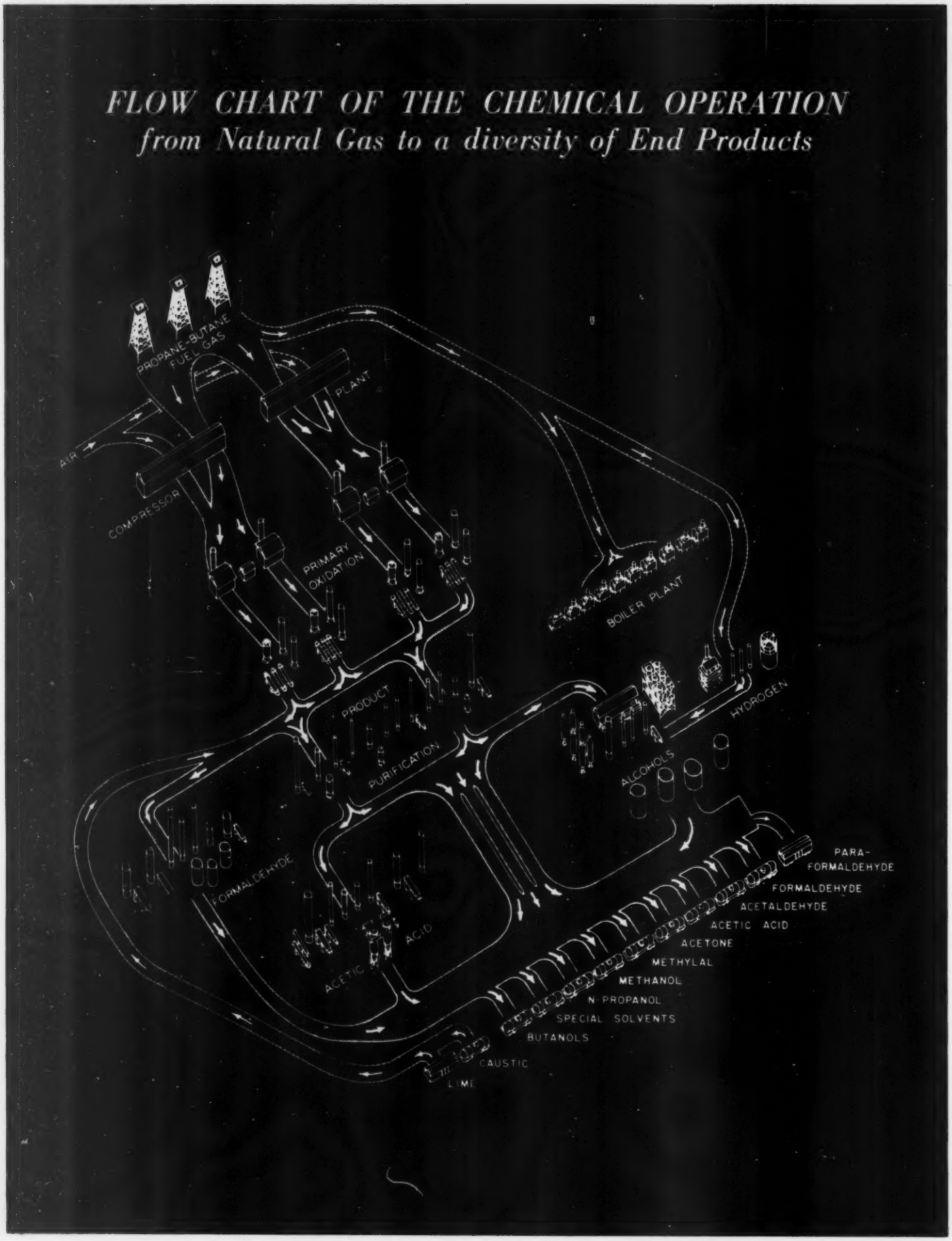
Research Laboratories at Summit, New Jersey

CELANESE RESEARCH

Many companies in all industry, the world over, enjoy less annual volume than is spent yearly by Celanese in product and production research exclusively. The expenditure of some $3,000,000-plus each year (it averages slightly over 1% of total sales) is an investment for the future, and from the Celanese laboratories have come many developments in textile fibers and in other fields, which have considerably improved the daily living of the nation's people as well as the profits of its many business enterprises.



Above: Research and pilot plants at Clarkwood
Below: Fractionating tower structure at Bishop


FLOW CHART OF THE CHEMICAL OPERATION
from Natural Gas to a diversity of End Products
PROPANE-BUTANE FUEL GAS
PLANT
AIR
COMPRESSOR
PRIMARY OXIDATION
BOILER PLANT
PRODUCT PURIFICATION
HYDROGEN
ALCOHOLS
FORMALDEHYDE
ACETIC ACID
PARA-FORMALDEHYDE
FORMALDEHYDE
ACETALDEHYDE
ACETIC ACID
ACETONE
METHYLAL
METHANOL
N PROPANOL
SPECIAL SOLVENTS
BUTANOLS
CAUSTIC
LIME

THE CHEMICAL OPERATION

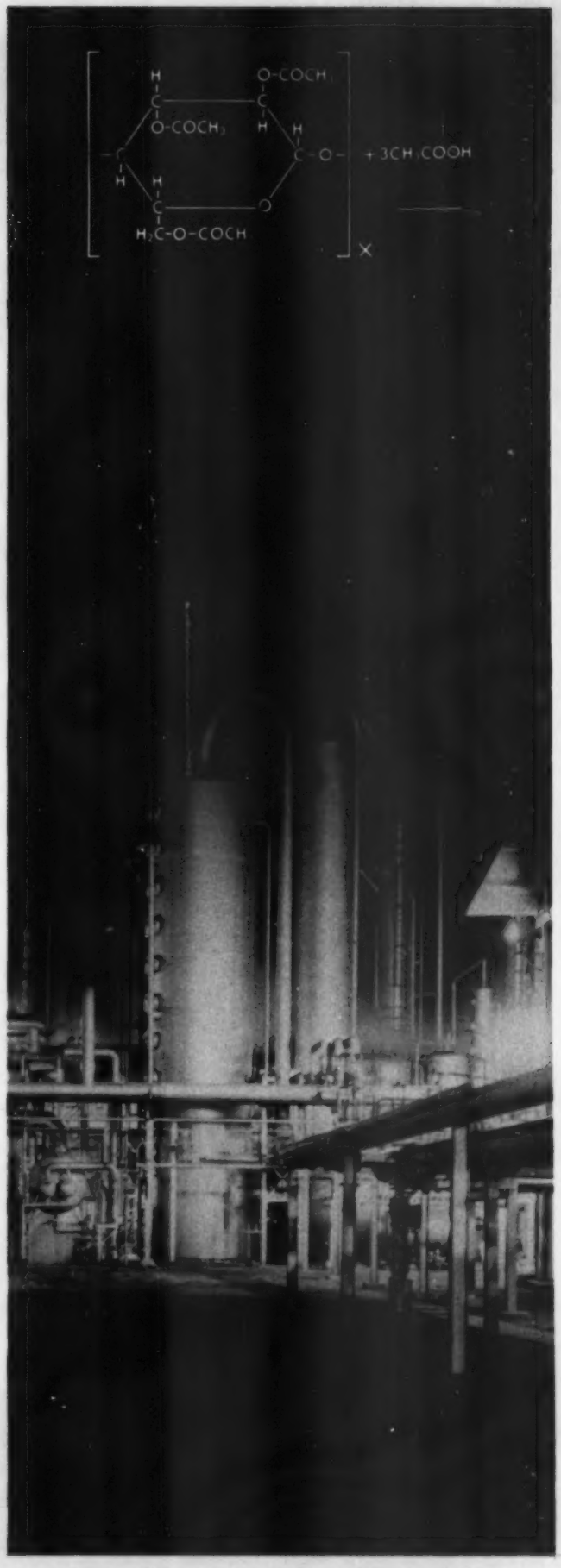
Even in textile thinking the Celanese viewpoint is a Chemical viewpoint

THE DEVELOPMENT of Celanese as a major force in this country's textile and fashion industry, beginning from the comparatively humble introduction of cellulose acetate in the field of manufacturing chemicals to process airplane wings, and continuing up to the current establishment of its many enormous plants from Texas to British Columbia, has always been marked by a fundamentally pioneering approach to all its problems and potentialities. If one talks with a Celanese executive, whether he is concerned with the production of raw materials, the textile division, promotion, merchandising or sales, he must be impressed with the *chemical* thinking.

True, the Celanese company manufactures many millions of dollars' worth of chemicals; while on the other hand, its status as a producer of fibers and fabrics entitles it to be known primarily as an important textile company. Yet whatever the company may produce for sale, there is at all times an acute awareness that it is the result of a chemical rather than of a manufacturing operation. This is the result of a constant adherence to fundamentals and at the same time of a driving urge to create new and more desirable products through the working of the laboratory.

If you know any first rate research chemist, you know that above all he cherishes the challenge of producing the impossible or of rationalizing the impractical. That is why Celanese has many times been able to produce a yarn, a finish, a construction, a complete fabric and sometimes even an entire new fashion. Because an awareness that chemistry is the company's main business so thoroughly pervades the entire organization, the natural pattern followed whenever the sales or merchandising departments envisions a potentially marketable but hitherto unknown type of cloth or yarn, is to shuttle the problem down the line from division to division — from manufacturing back to pure chemical theory — each making its contribution. When the problem has been solved the journey is reversed, and the new idea travels back up the line, at each stage improved, perfected and enhanced until it comes out as a completely practical and profitable new product.

Whether it is a problem of attaining a supertwist in a fiber in such a way that the cloth will take a certain dye both uniformly and at high production speed, or of achieving a mesh for a man's sport shirt which will drape smoothly and not sag or pull out of shape — and these are simple problems compared with some solutions Celanese research has brought forth — whatever the objective, it is approached from the viewpoint of chemistry rather than merchandising; and this is one prime factor in the ready acceptance of Celanese developments by both manufacturer and consumer. *(please turn the page)*



Clean conditions and an absence of personnel, due to automatic operation, characterize the chemical plant

Gigantic spruce and hemlock mature in the northern timberland

THE LUMBER OPERATION

Celanese thinks far into the future to ensure lumber for its essential needs.

HAVING DEVELOPED its chemical and fiber business to the point where continuous supply is a major concern, Celanese had to search for sources of raw materials on which the operation of the whole Celanese manufacturing organization depends. These could not be susceptible to local fluctuations of supply and demand, so the conclusion was reached that no source had greater merits for cellulose pulp than the western Canadian forests. For hundreds of square miles round the coasts of British Columbia grow virgin forests which, as man comes to cut their rich lumber, heal their scars and replace what has been cut with natural growth very speedily. Thus arises the possibility of rotational natural production of cellulose pulp outside the laws of trade cycles, yet in an area easily accessible for rail and waterborne transport.

Thus the Celanese affiliate Columbia Cellulose Company holds the first Forest Management License to be granted by the Province of British Columbia, and has established the city of Prince Rupert as center of the new operation. This is significant as the indication of a fresh return to the soil, by even our biggest industries, as the prime source of the nation's wealth.

✓ ✓ ✓

At Prince Rupert has been established a plant with an initial capacity of 200 tons daily of bleached sulphite pulp. To this end the logs, cut in blocks to allow of methodical reforestation, are brought by rafting and towing down natural waterways to the mill to be processed.

At the mill the logs are processed. Power for this operation is both by steam and water. The steam plant, depending for operation on local coal resources, is the largest of its kind in Canada and has a continuous rating of 180,000 pounds of steam per hour. The water power, brought through a pipeline seven miles long, with a capacity of 25,000 gallons per minute, is derived from an artificial dam which utilizes the natural local river conformation. Thus, so far as possible, the power supply is locally obtained and not dependent on outside factors.

On arrival the logs are carried by a continuous lift to the saws, where they are cut into even lengths and moved on, in sections, to be stripped of their bark. This is done by hydraulic barkers which do not touch the wood and eliminate the bark without wastage. The bark is itself carried to the boilers and converted into valuable energy, being burned for process steam forthwith.

✓ ✓ ✓

Next is converting the logs into chips less than an inch square, which is accomplished in a matter of seconds by a machine which devours an unending succession of these forest giants, disgorging the chips to a conveyor belt by which they are carried to storage. As the logging is dependent on weather conditions in the rivers and on the coast to some extent, and a serious delay in the flow of logs would therefore cause disruption of the whole mill, the storage for chips has capacity enough to operate for three days, thus cushioning any irregularities arising in rafting and towing to the mill.

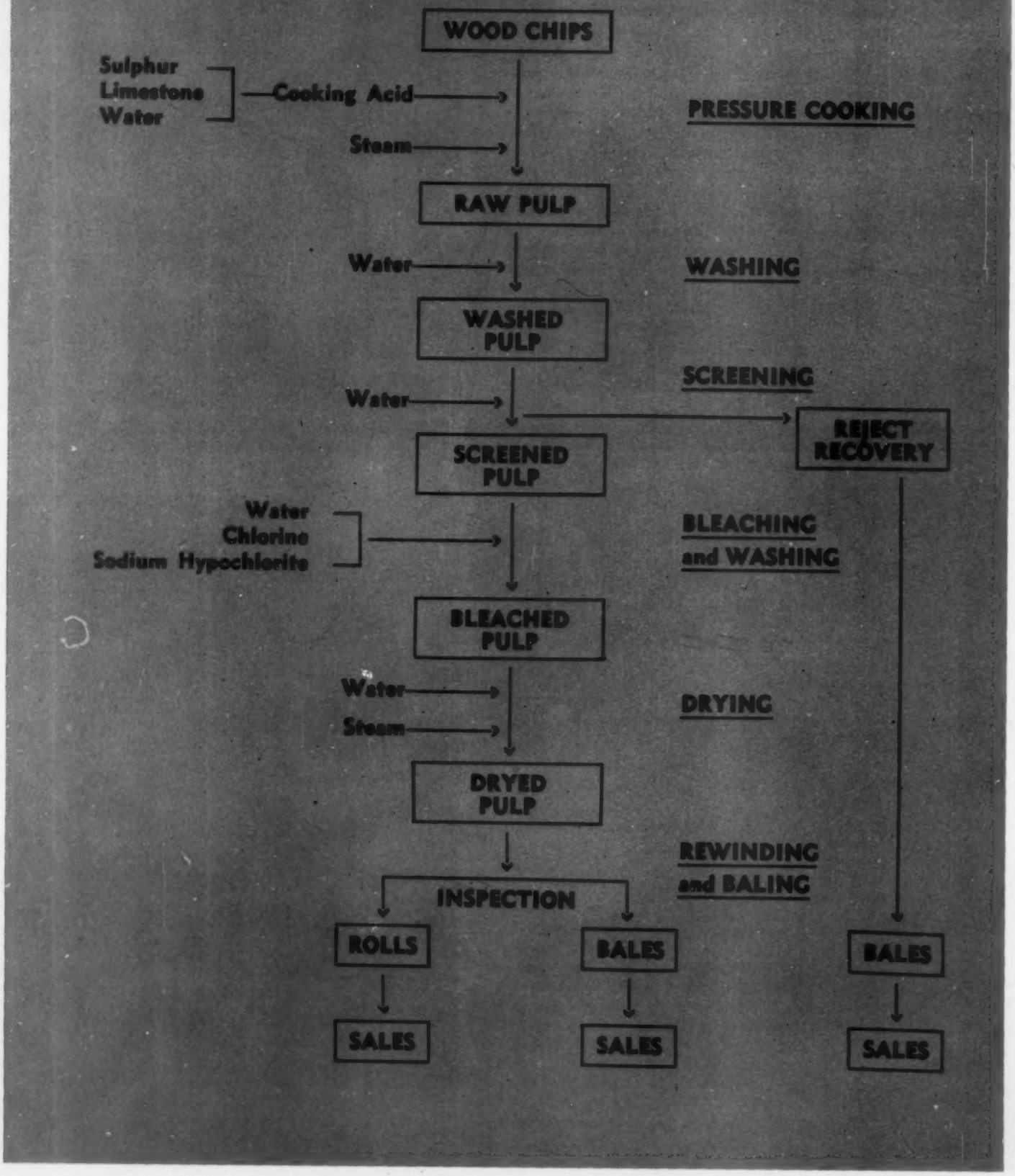
In order to convert the chips into the basic raw material

(please turn the page)

Sorting logs in the dock before sending them up the jack-ladder at back

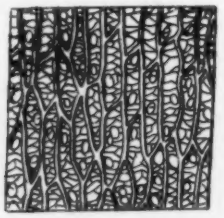
At top of jack-ladder the logs are cut into twenty-foot lengths by giant saws

THE BLEACHED SULPHITE PULP PROCESS



THE LOVELIEST FASHIONS OFTEN BEGIN AS LOWLY WOOD CHIPS

Would you believe it possible that the soft and clinging fashion worn by the model in this photograph had its origin in the wood of a Canadian tree? And yet, through the process charted on the opposite page the wood chip shown above ultimately became an ethereal Celanese yarn which was woven into a head-turning dress.



Automatic conveyor belts carry the chips to storage or down to digesters

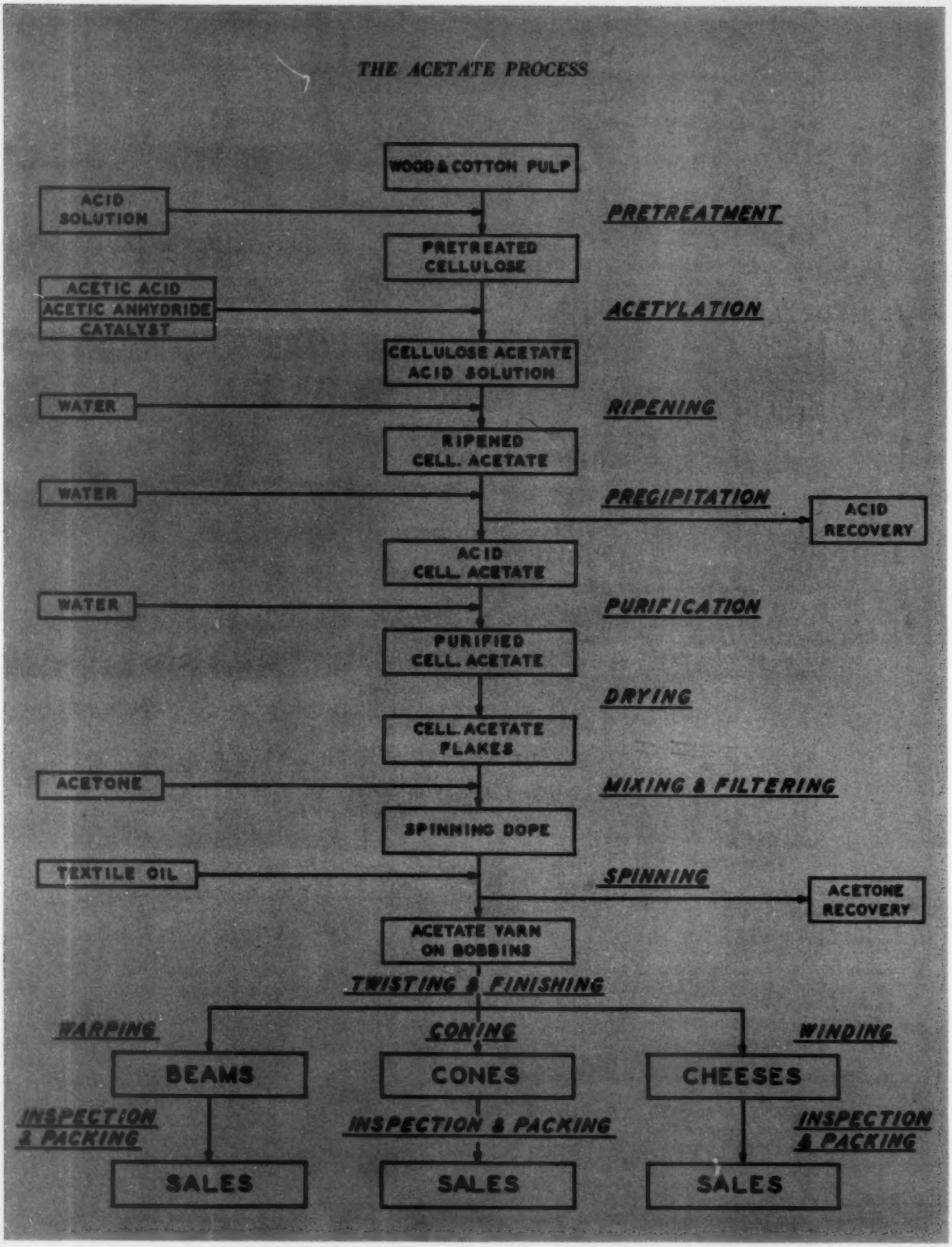
Giant digesters brew chips into pulp stock; each container holds 50 tons of chips

Celanese . . . continued

which Celanese requires, they must be disintegrated into the form of pulp. This is accomplished by cooking slowly in large vertical containers with a digesting agent, calcium bisulphite, also locally manufactured in order to ensure security of supply. After cooking the chips are reduced to pulp, which is then washed with water, screened to a perfectly uniform texture and content, and finally bleached with chlorine and sodium hypochlorite to a uniform white tone. The wet high-grade pulp can now undergo drying and forming into an endless band, rolled as it comes out of the dryer, ready for bulk shipment.

In this form the pulp, which is the basic material for manufacture of fibers by the acetate process as well as for plastics and other goods of cellulose base, passes both to the various Celanese plants where it will be used, and to other purchasers who have the same requirement. *(please turn the page)*

Pulp emerging from the dryer is wound in jumbo rolls for inspection and storage

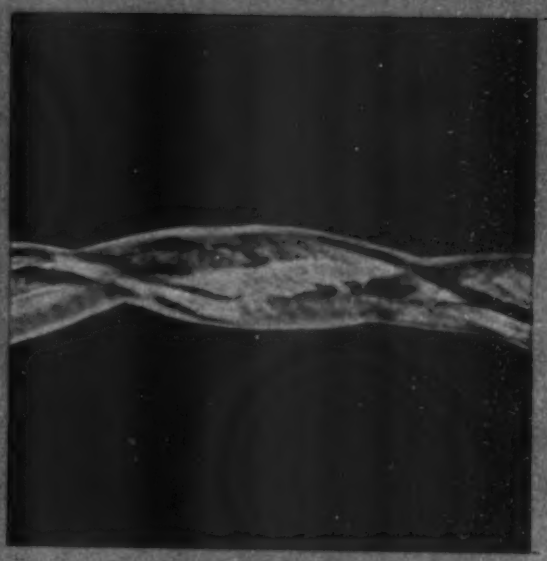

THE ACETATE PROCESS
WOOD & COTTON PULP
ACID SOLUTION
PRETREATMENT
PRETREATED CELLULOSE
ACETIC ACID
ACETIC ANHYDRIDE
CATALYST
ACETYLATION
CELLULOSE ACETATE ACID SOLUTION
WATER
RIPENING
RIPENED CELL. ACETATE
WATER
PRECIPITATION
ACID RECOVERY
ACID CELL. ACETATE
WATER
PURIFICATION
PURIFIED CELL. ACETATE
DRYING
CELL. ACETATE FLAKES
ACETONE
MIXING & FILTERING
SPINNING DOPE
TEXTILE OIL
SPINNING
ACETONE RECOVERY
ACETATE YARN ON BOBBINS
TWISTING & FINISHING
WARPING
CONING
WINDING
BEAMS
CONES
CHEESES
INSPECTION & PACKING
INSPECTION & PACKING
INSPECTION & PACKING
SALES
SALES
SALES

Three Key Stages
in the acetate process shown in the chart opposite

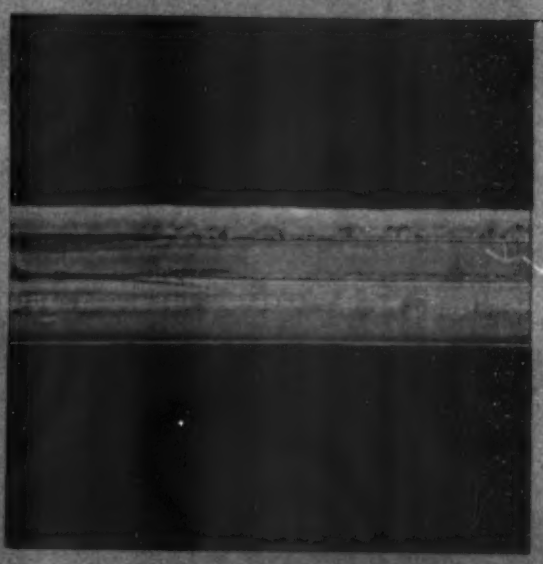
Bleached Sulphite — pulp in the form in which it arrives from the mill

Cellulose acetate flake — central link of the chain by which forest trees are transformed into man-made yarns

The final stage of the acetate process gives a perfect skein ready for twisting, finishing or conversion into staple



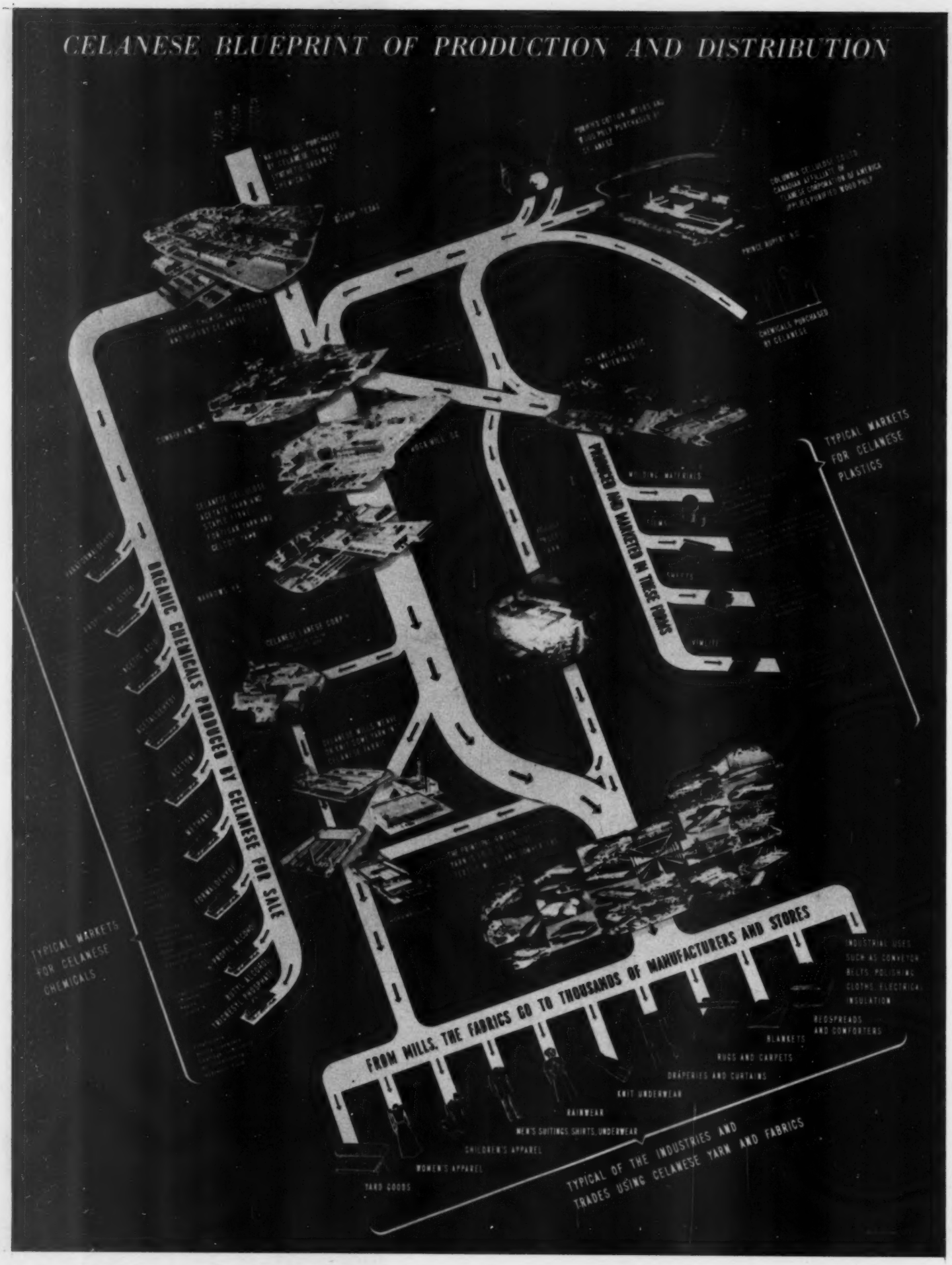
Fiber of Cotton x 480

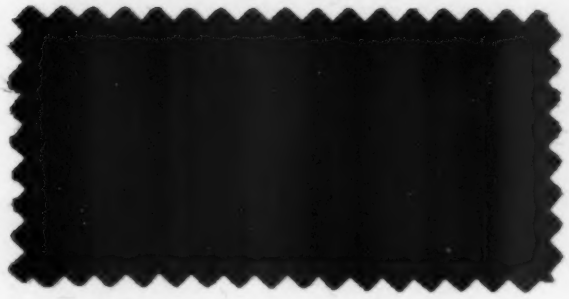


Celanese Fiber x 480

Fiber of Wool x 480

CELANESE BLUEPRINT OF PRODUCTION AND DISTRIBUTION


ORGANIC CHEMICALS PRODUCED BY CELANESE FOR SALE
TYPICAL MARKETS FOR CELANESE CHEMICALS
FIBERS AND MADE IN THESE FORMS
TYPICAL MARKETS FOR CELANESE PLASTICS
CHEMICALS PURCHASED BY CELANESE
FROM MILLS, THE FABRICS GO TO THOUSANDS OF MANUFACTURERS AND STORES
INDUSTRIAL USES SUCH AS CONVEYOR BELTS, POLISHING CLOTHS, ELECTRICAL INSULATION
BEDSPREADS AND COMFORTERS
BLANKETS
RUGS AND CARPETS
DRAPERIES AND CURTAINS
KNIT UNDERWEAR
RAINWEAR
MEN'S SUITINGS, SHIRTS, UNDERWEAR
CHILDREN'S APPAREL
WOMEN'S APPAREL
YARD GOODS
TYPICAL OF THE INDUSTRIES AND TRADES USING CELANESE YARN AND FABRICS



Celanese acetate suiting fabric of sharkskin type.
For classic men's and women's year-round suits

THE WEAVING DEPARTMENT OF CELANESE

A wheel within the wheel, Celanese maintains its own finished fabric division as an example to the trade

WHEN CELANESE initially introduced its yarns there was not the ready acceptance and understanding of man-made fibers which pervades the textile industry today. In addition, Celanese was a relatively unknown producer, and it had to work under the added handicap of being a stranger in the midst. Still further, the types of yarns and the end uses which Celanese suggested were quite different from the common offerings, and this presented still another obstacle.

The logical step to the management of Celanese was to set up their own weaving operation, using their own yarns and producing the types of fabrics they had in mind . . . thus demonstrating as an accomplished fact what could be done with Celanese yarns. Then when a Celanese representative approached a prospective purchaser and discussed the advisability of using a specific yarn, the discussion could be held on the level of proven practicality rather than theoretical application.

As a result of these circumstances Celanese became one of the most progressive factors in the development of new applications of man-made fibers. Today it uses better than eight percent of the entire yarn output of the parent company; and when we note that Celanese supplies approximately fifty percent of all the acetate yarn used in textiles in this country, this is quite a substantial quantity. However, Celanese did not use its cost advantage to place competing weavers in a weak position; in fact, the company quite deliberately maintains its fabric prices at a level which supplies an ample umbrella for competition.

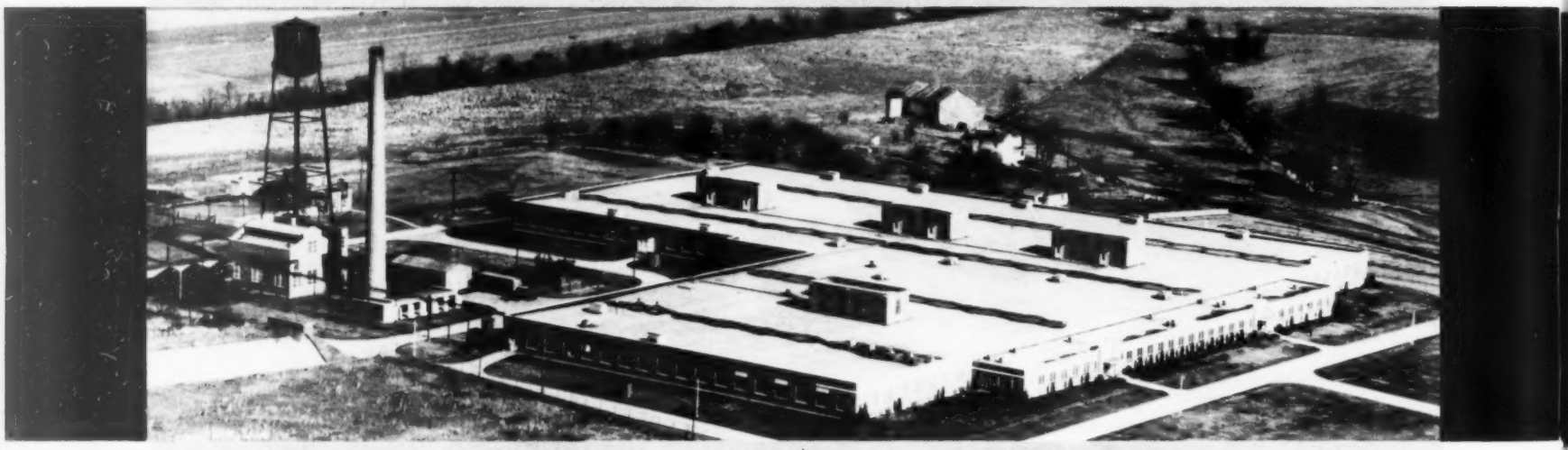
Having initiated the weaving department as a bellwether, and with the viewpoint of a chemical rather than a textile company, naturally there came a constant flow of new and original ideas for both fabric construction and finish. The philosophy was, and still is, that the way to increase the sales of Celanese yarns is by showing the prospective user newer and better ways in which to use the yarns. What resulted naturally was that Celanese became known in the textile and fashion industry as a creative organization, one to be heeded and emulated. Two outstanding instances which portray the reasons for this industrywide attitude are the Celanese fabric show in New York last January when, in competition with all other weavers using Celanese yarns, the company's own weaving department showed cloths which drew at least as much acclaim as any others; and, of course, the sharkskin produced by Celanese is still, after a number of years, openly admitted by all to be the finest of its type.

The gamut of end uses which is successfully run by the Celanese woven fabrics is almost limitless. At the one extreme we find the gossamer sheer and filmy fabrics required for intimate wear, formal dress and hot-weather apparel; in the middle are the purely utilitarian types, including fabrics for both personal wear and home decoration; and at the other extreme we find textiles designed to withstand the rigors of industrial use. But all have the common denominators: they use Celanese yarns, and the constructions were developed in the research laboratories of Celanese.

Celanese is today the only rayon producing company which follows through to the final stage of finished fabrics; and in the weaving operation, as in all other phases, it is apparent that the clinical, *chemical* approach to a problem has brought the Celanese fabric division to the front ranks of the industry.

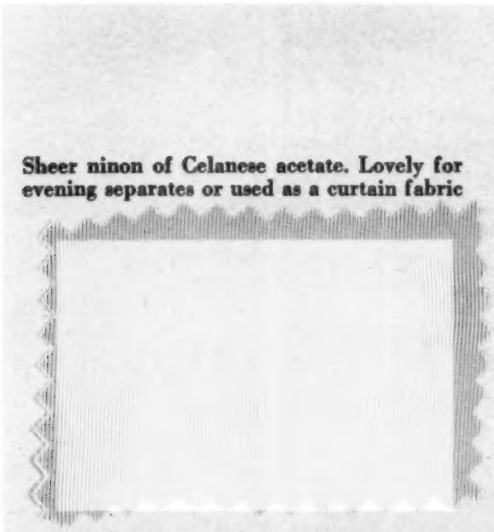
(please turn the page)

Novelty crepe of Celanese acetate, with thick-and-thin texture. For apparel or furnishings and curtains

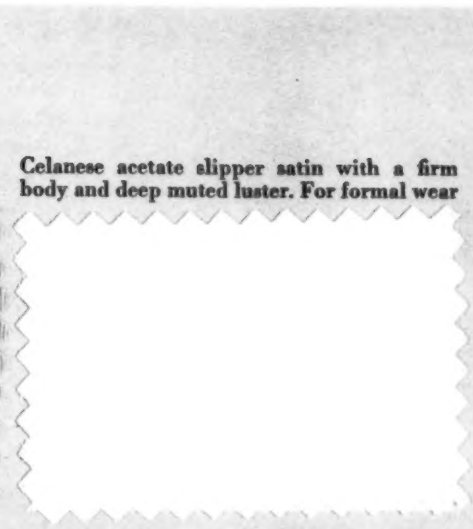


Celanese Weaving Plant at Staunton, Virginia

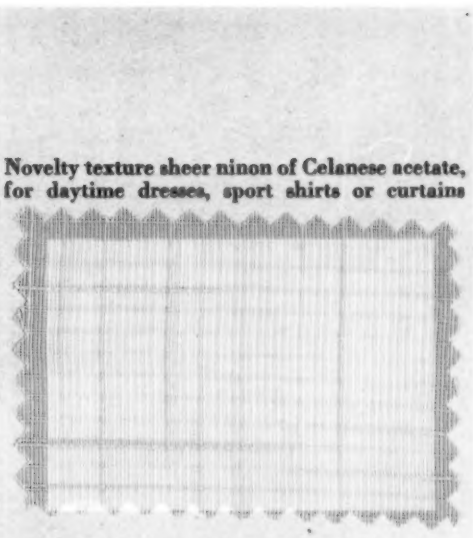
Celanese acetate crepe. Although a fancy weave construction, the finished effect is smooth



Sheer ninon of Celanese acetate. Lovely for evening separates or used as a curtain fabric

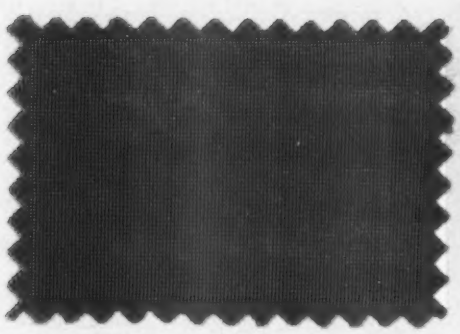


Celanese acetate slipper satin with a firm body and deep muted luster. For formal wear

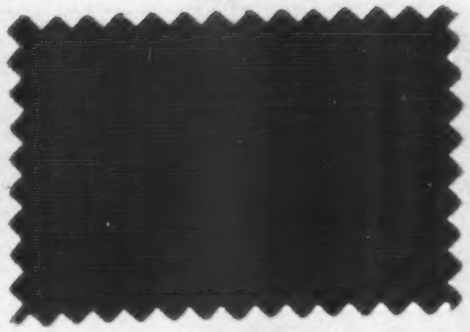


Novelty texture sheer ninon of Celanese acetate, for daytime dresses, sport shirts or curtains

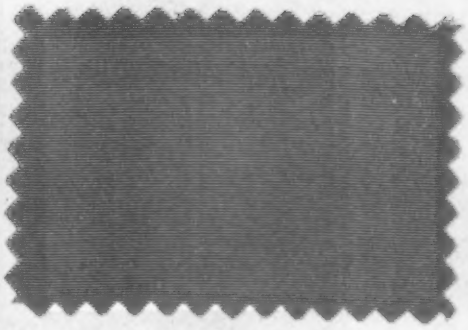
In its own mills, Celanese develops many new fabrics which often become forerunners of fashion . . .



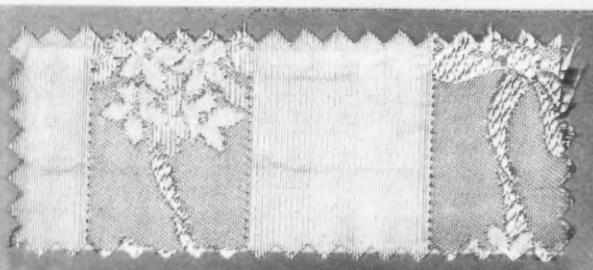
Smooth sagless warp-knit jersey of Celanese acetate suited for leisure wear



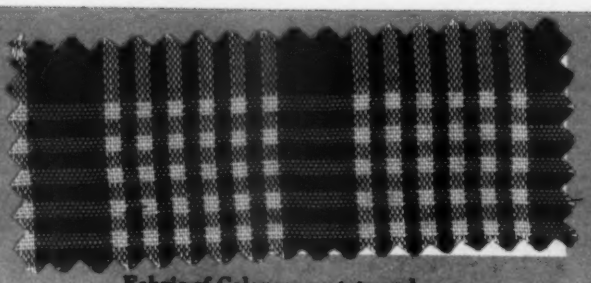
Classic crisp faille of Celanese acetate with plain weave. For children's wear and sportswear



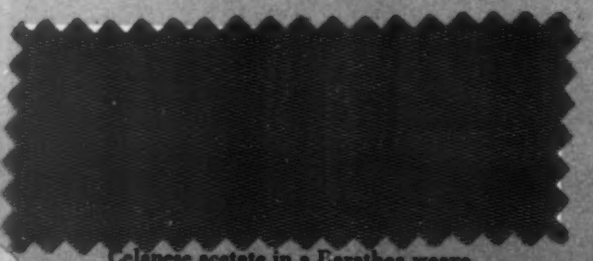
Luxurious faille-taffeta of Celanese acetate with crisp drapable hand. For formal wear



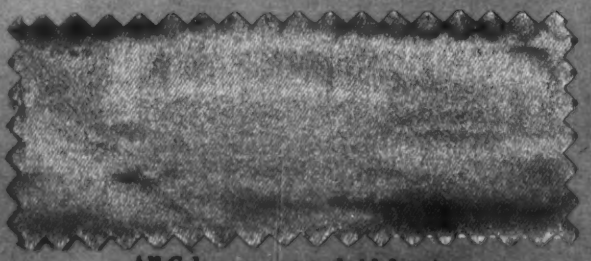
Celanese acetate taffeta cross stripe combination weave by TEX-RAY FABRICS



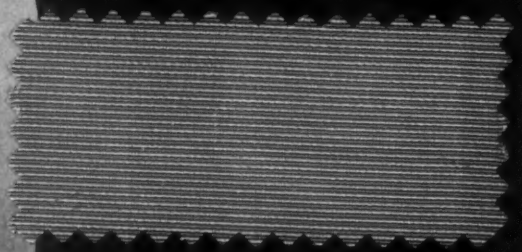
Fabric of Celanese acetate and rayon by LANKENAU



Celanese acetate in a Barathea weave by BELDING HEMINWAY CORTICELLI

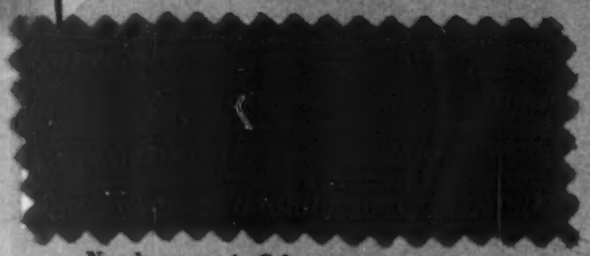


All-Celanese acetate bridal satin by WILLIAM SKINNER

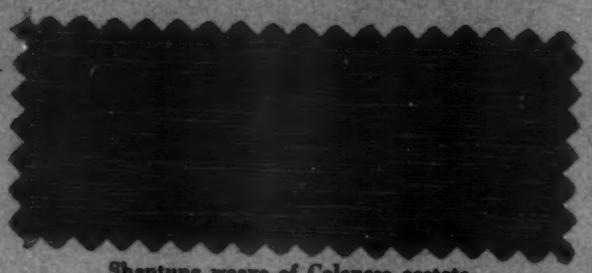


Bengaline faille of Celanese acetate and Fortarn by AMERICAN SILK MILLS

Tweed-woven iridescent taffeta of Celanese acetate and rayon by MALLINSON

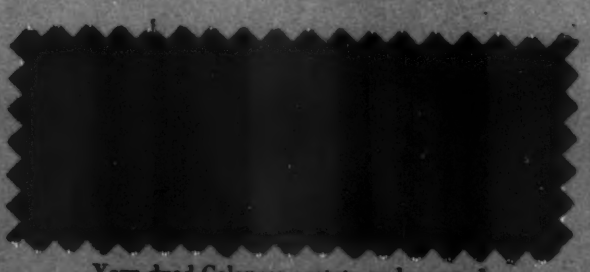


Novelty weave in Celanese acetate and rayon by ALLURE FABRICS

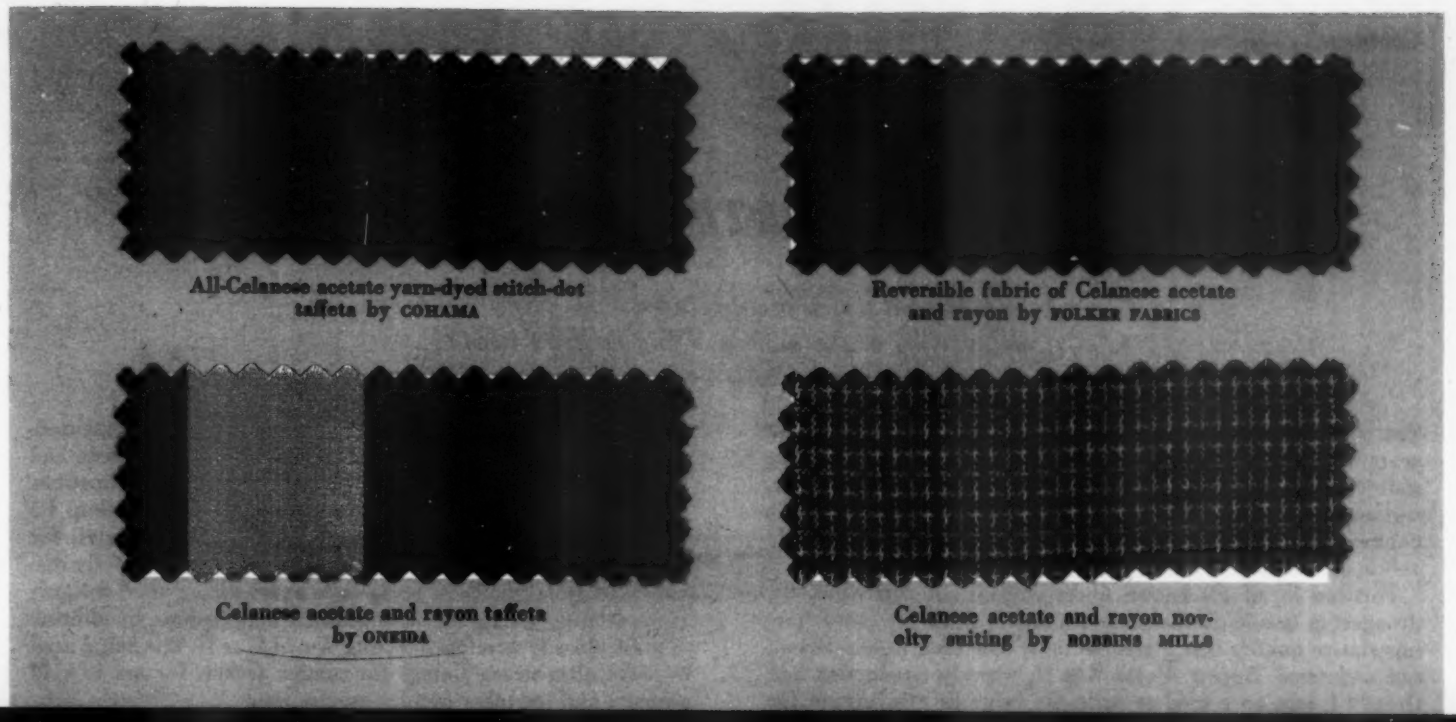


Shantung weave of Celanese acetate and silk by JUILLIARD

Fancy year-round suiting of Celanese acetate and rayon by BURLINGTON MILLS



Yarn-dyed Celanese acetate and worsted novelty faille stripe by JULIUS WERK



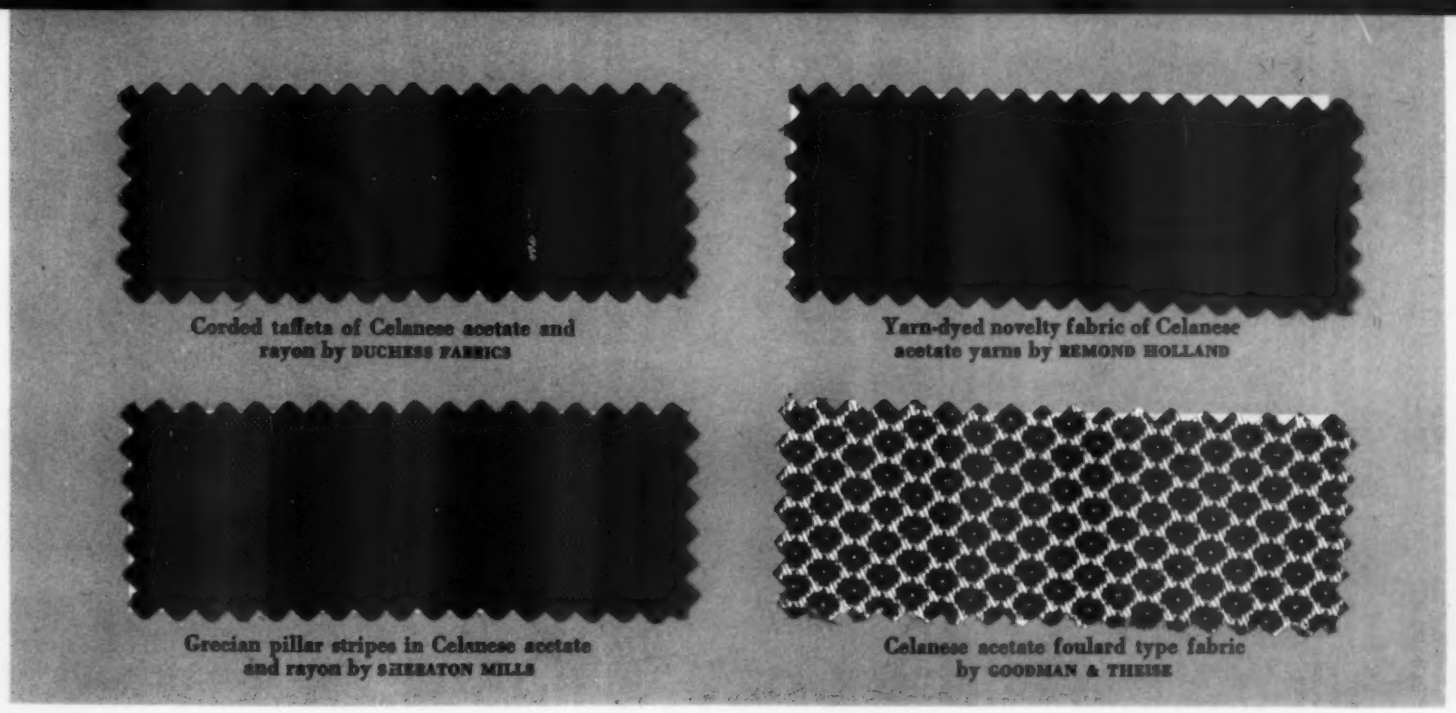
All-Celanese acetate yarn-dyed stitch-dot taffeta by COHAMA

Reversible fabric of Celanese acetate and rayon by FOLKER FABRICS

Celanese acetate and rayon taffeta by ONEIDA

Celanese acetate and rayon novelty suiting by ROBBINS MILLS

. . . and independent mills using Celanese yarns and Celanese research create a constant flow of new fabrics



Corded taffeta of Celanese acetate and rayon by DUCHESS FABRICS

Yarn-dyed novelty fabric of Celanese acetate yarns by REMOND HOLLAND

Grecian pillar stripes in Celanese acetate and rayon by SHERATON MILLS

Celanese acetate foulard type fabric by GOODMAN & THEISE

FORTISAN

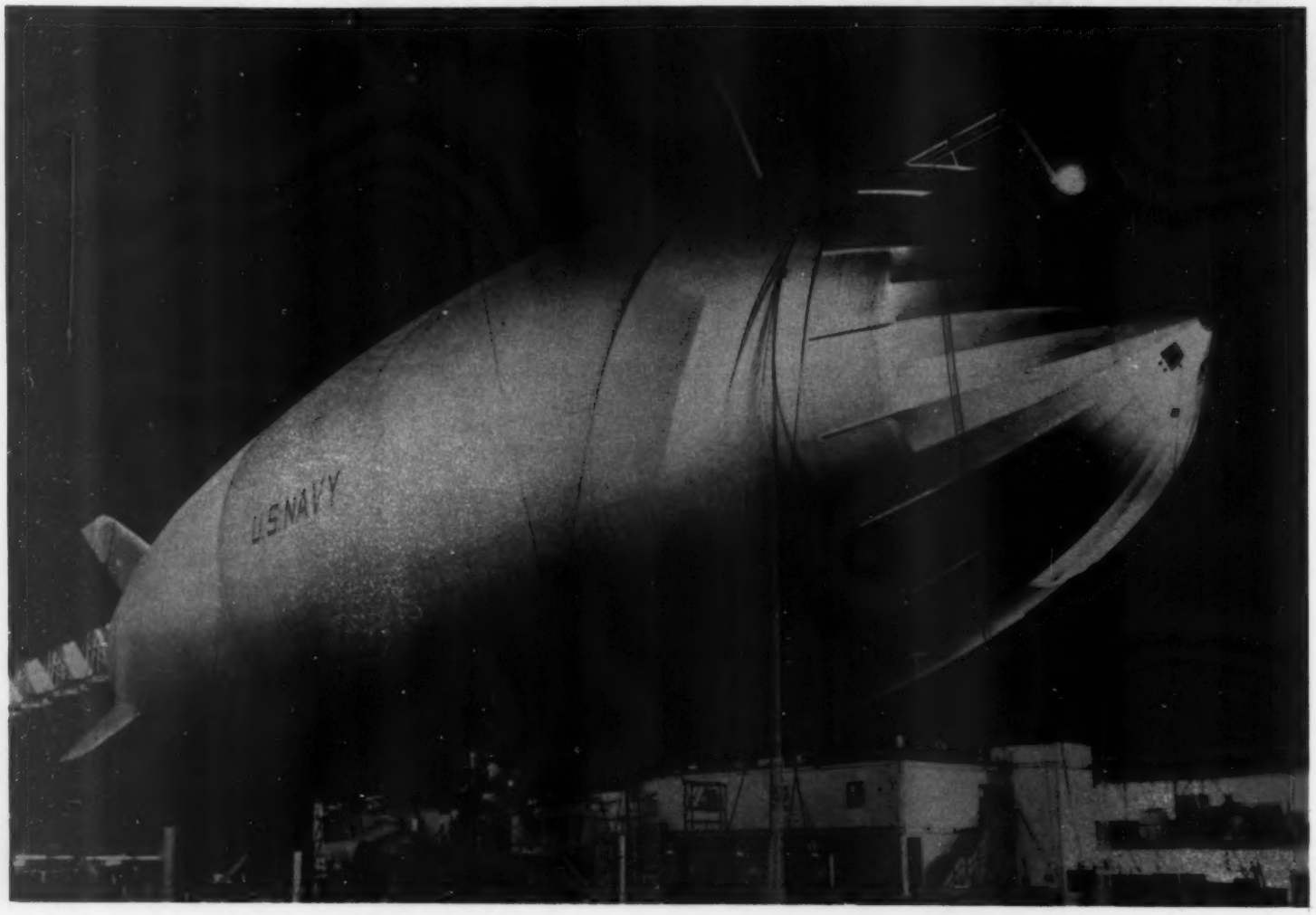
A development which proved that acetate yarns could measure up to the most exacting military needs

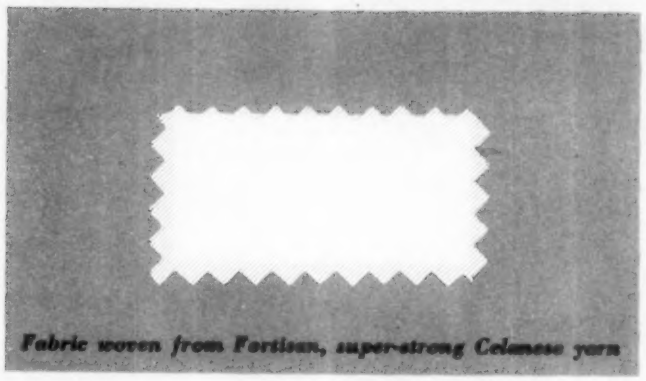
THE MAN-MADE FIBER market has been characterized over recent years by a search for fibers of ever greater tensile strength for wide varieties of application. This demand has resulted in several notable discoveries, among them nylon — well known to the public — and Fortisan, which has so far received relatively little public attention.

Fortisan is, of all known fibers natural or man-made, the strongest in tensile character, and it is paradoxically due to this superlative quality that it has not until now been widely known and acclaimed. During World War II, when its production had already begun on a modest scale, its value as a substitute for natural silk in parachutes became quickly known. It was immediately put to use, in order to conserve natural silk which was very scarce, for flare and cargo chutes and for balloon and airship fabrics. This rapidly absorbed the whole output of Fortisan for the duration of the war.

After the war for a short time it became available for commercial purposes and quickly found acceptance for raincoats and kindred garments, and for certain specialized applications such as racing sails where it superseded Egyptian cotton. Its appearance in civil life was, however, destined to be brief, for with renewed growth of the nation's defense needs it rapidly disappeared from the scene, being once again wholly used for government uses. Among the latest military applications, in addition to those already developed during World War II, it is being used to make ultra-strong linings for combat jackets for use in cold climates and for other regular service issue.

Fortisan thus provides an example of the value of fiber research and development where it has sought to bring superlative quality into its products — in this case resulting in the manufacture of a new item of vital defense value, with bright prospects for commercial application when defense needs have been filled.

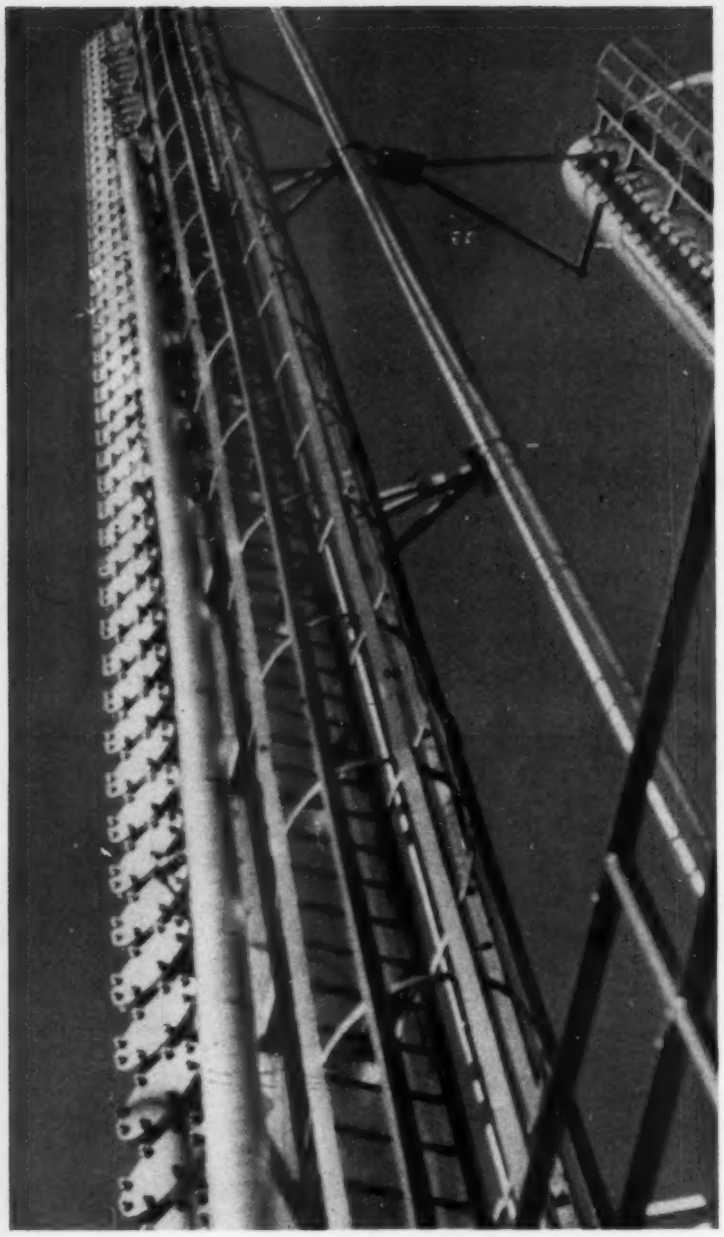




Fabric woven from Fortisan, super-strong Celanese yarn

Combat jackets worn by American soldiers now have linings made of Fortisan, super-strong Celanese yarn.

Defense Department Official Photos



Celanese . . . concluded

EVEN IN THIS necessarily condensed story of Celanese two things are obvious: *first*, that the American textile industry has attained world leadership through daring, vision, drive and a complete indifference to traditional thinking and processes; *second*, that so long as companies like Celanese continue to inject so much creative thinking into their work, from raw material to end product, every individual who is in even the smallest way a part of the American fashion industry has every justification for feeling pridefully that he is sharing in one of the social as well as in one of the significant economic phenomena of our times · *END*

COLORFUL FABRICS FOR CASKETS

Howard Ketcham,* AMERICAN FABRICS' *Consultant Editor on Color, has consistently emphasized the importance of new uses of fabrics in his industrial design planning. His unique assignment for a manufacturer of funeral caskets stressed the role fabrics play in the product; his work emphasized a principle he has long followed . . . product design should boost retailers' services as well as sell the product.

EVERY YEAR IN AMERICA some 30,000,000 yards of fabric are built into a product which disappears into the earth after serving its purpose for a few brief hours. The product . . . and its fabrics market . . . serve a demand that does not fluctuate from year to year, or from prosperous to depressed periods.

America's funeral industry receives expenditure by the public of more than 700 million dollars every year, in a gesture of emotion and respect to the million and a half men, women and children who have died. Serving this need are: 25,000 funeral directors, 40,000 cemeteries, 24 mortuary colleges, 520 manufacturers of caskets.

From decade to decade, as from century to century, taste and styles change in burial caskets, as in many other products of our civilization. The home-made wooden box of frontier days gave way to the local carpenter's handiwork, later to a frilly Victorian expression of tribute to the departed and, finally, to the metal casket of the present day.

The modern casket in every case is fabric-lined, and the revolution in fabric styles for this industry is an epitome of the psychology of our times.

Formerly 80 per cent of caskets were black, the balance grey; by 1940 more than 40 per cent were in color, and today a variety of subdued colors . . . in many cases tone-on-tone color combinations . . . is playing an important part in the finishes and stain treatments of metal and wood caskets. Some of the wood exteriors have blond finish and others range through rich, deep colors. As the casket exterior styling has changed, the fabric interior lining is subject to new ideas to keep up with it.

Today the power of color to sway the feelings is applied to caskets as it is to other phases of modern life. Funerals, as everyone realizes, are for the living; and the fabrics and fabric colors which go into the casket are now being carefully planned to give the best possible appearance of harmony and dignity, as the particular occasion demands.

In the Victorian era, the ornate trimming on the casket exterior was matched by a frilly fabric lining. The fabric was frequently puffed or pleated or shirred into a variety of fancy design stylings. In most cases, white lining fabrics were used. But in recent years funeral directors have become aware that a white fabric background for the features of the deceased tends

(please turn the page)

to bring out the blemishes and uneven coloration of the human skin. A trend toward flesh-tone fabric colors has therefore gradually developed.

Today up to 80 per cent of the casket lining fabrics have some tint of pink, light cream, rose-tan, eggshell, honey beige and similar colors of the type classed as *flesh-tones.* One of the largest funeral establishments in the country, located in the nation's capital, reported that four out of five casket interiors are of deep eggshell fabric with a dull finish; a light, delicate grey lining was second in favor, and a peach tone was third. In nearby Virginia and North Carolina, the trend outside the cities is similar, but less pronounced; the proportion of white interiors has dropped from ninety to far less than fifty per cent.

Basis for the Change

However, the industry's thinking on the subject of casket fabric colors has not stopped at this point. Changes in casket styling are being developed to serve more effectively in improving the appearance of the deceased, in order that the bereaved family may derive more comfort from the funeral ceremonies.

The basis of these changes lies in the more effective use of color, coordinated to the exterior coloring of the casket and to the complexion and hair colors of the deceased. The emphasis on fabric colors and the opportunity . . . in fact, the need . . . for greater variety of color offer manufacturers seeking this valuable textile market an opening for initiative and service which can pay off in sales.

Reliance on flesh-tones alone does not meet all requirements because (1) many complexion types are less enhanced by this type of color than by other hues; (2) in some instances the exterior finish of the casket is not keyed to best advantage to flesh-tone linings; (3) the reliance on a single type of fabric color in caskets leaves little to the initiative of the funeral director in serving his community.

The rules of color contrast, known from experience in other applications of color, can best assure that caskets and fabrics are planned to bring all attention toward the deceased, and at the same time provide a setting which enhances appearance. These procedures include:

- Using a color with its complement
- Combining a warm and a cool color (that is, one that has red or yellow in it with one that has blue in it)
- Combining a light tint with a darker shade
- Employing a pure or brilliant color with a greyed tone
- Using a large area of one color and a smaller area of another

It is found today, in paying tribute to the departed as in other phases of our lives, that we seek perfection. Colors are called upon to serve unobtrusively, but practically to create the mood of the occasion. Therefore, the planning and application of color receive more consideration than ever before.

Although from the Biblical references to *sackcloth and ashes* we are accustomed to think of black as the traditional color for funerals, history shows that this is not the case. The ancient Greeks employed purple and black; the Egyptians, yellow and white; the Chinese, yellow and white; the Romans, white. By the medieval period, the colors deemed appropriate for mourning had undergone an evolution: in the Moslem world, blue was the color used; in France, the white of Roman times was still employed; but in Saxon England black had come into use. In the sixteenth century the French adopted black as a mourning color, and it then became universally the mourning color throughout Europe. However, in Asia white remained the mourning color until recently, and in the East Indies cream is the symbol of bereavement.

With this historical background, it is easier to understand an evolution in our contemporary thinking which gives as much freedom in the use of fabric colors for a casket as it does in the brilliant-hued flowers which drape and surround it.

Fabrics in the Casket

Each casket requires from 18 to 20 yards of fabric for interior lining. The fabric is used as a cover for the interior of the casket lid, as a draped background extending from rear rim to front rim, on which the body rests, as a pillow, as a blanket, and as a drape covering the lower half of the casket, which in many cases remains closed while the deceased lies in state. One of the leading manufacturers reports that three out of four caskets are made with a divided lid, so that the lower half can remain closed while the deceased is viewed.

Lining fabric is chosen with the basic consideration that it must be readily applied to the metal or wood casket, without suffering damage or undue wrinkling in the process. At the same time there is no problem of durability to contend with; casket fabrics do not require constructions designed for hard service.

Among the materials employed to give the casket lining a rich appearance without excessive cost are rayon crepes and satins, velvet and other appropriate weaves. Caskets with velvet linings, for example, are apt to have a particularly strong appeal in the winter, because they have a warm look; the softness of this construction is also favored. Cool rayon constructions are general favorites, especially so in summer. Fabrics with glossy finish are more apt to have a market in caskets sold for women, although the trend is away from linings with a high sheen because such surfaces attract attention to themselves, and away from the deceased. Silk plush has been used, and broadcloth is often used, although frequently it is considered too sedate by many funeral directors.

Present-Day Approach

In short, the trend in casket fabrics is away from *shroud psychology.* Death is stressed less than the living appearance of the

departed. The old Quaker custom of burying the dead in night-clothes still has a strong hold in the Philadelphia area, emphasizing the *last sleep* connotation of death. For this reason, perhaps, the full-length casket lid is more favored in that area than the divided lid whose lower half remains closed during the lying-in-state period.

Soft and flexible constructions are favored for the fabrics. Taffeta, for example, is considered too wiry. It can be used successfully in the *tailored* interior lining, but has less applicability for quilted interiors. Many nylon constructions meet the same objection, particularly when the quilting design is pressed into the fabric instead of sewed in.

Satin, a casket lining fabric with more appeal for women than for men, is used mainly in quilted or puffed applications. These *fussy* applications are themselves more feminine in appeal.

Fabrics are chain-stitched, a quicker operation than lock-stitching. They are given extra strength by proper planning of the pattern in which they are applied to the casket. Casket lining designs are planned so that the material flows in without stretching, providing a surface compensation for each indentation made on the reverse side.

Functional Color Styling

. At the convention of the National Association of Funeral Directors in Philadelphia last year, something new was offered to the industry . . . Functional Color Designs.

No application of color applied in many years of specialized product design . . . certainly no application of fabric . . . has presented more of a challenge than that made by the Batesville Casket Company some months earlier:

Help soften the blow for those who have lost a dear one.
Help the funeral director to help the bereaved.

The tendency to view the entire subject as macabre was at the outset a natural reaction. Fabrics men conferred with have had the same initial reaction. Yet basically the same answer has arisen: color expressed in fabric can be appropriate for and add dignity to a funeral ceremony.

The first step was to consider the question of the persons to be served. Some colors flatter men, some flatter women. Some colors enhance the appearance of the old, others set off the fresher skin tones of youth. Some colors are a better backdrop for grey hair, some are good settings for brunette, blonde, red or white locks. Casket planning provided a choice for each. In addition, as usual, colors were planned with an eye to their effect in combination in the interior, and in coordination with the colors of the exterior finish; also with regard to certain practical considerations in the handling of caskets.

For instance, colors around the rim and the border of the casket lid were selected to provide a transition from the exterior finish color to the interior lining colors specified; the transition effect draws the eye from outside the casket to the interior, and to the deceased. Colors of fabrics used inside the casket are planned to provide an effective but inconspicuous background for the clothing of the deceased.

The upraised casket top, to cite another instance, forms a backdrop against which the deceased is viewed. The lid itself is not emphasized for the focal point is always the deceased, rather than the casket or any part of it. The Victorian appeal of an ornate casket does not appeal to the more incisive thinking of people today; a casket now is regarded as a vehicle for a farewell by the bereaved, not an object of attention in itself. So color is keyed to make the lid seem lighter, smaller, less conspicuous.

Considerations in Color Harmony

One of the curious phenomena of color is that four colors can be blended to form a less obtrusive background than a single color might provide. This was the objective in planning casket

(please turn the page)

interiors in Functional Color Design. For example, four fabric colors ranging from palest flesh pink to deep mulberry wine can, in proper arrangement, create a harmony with the exterior metal finish of a casket, the clothing worn by the deceased, and the features of the deceased. The combination of colors attracts less notice to itself than any one of the colors alone might create.

The casket interiors planned as Functional Color Designs were variously specified for men or women, or either; for the old or the young, or for all ages; and for persons with different hair color. By applying different colors on the reverse side of the casket pillow, for instance, it was possible to recommend the same casket for dark-haired or light-haired persons, one side of the pillow being preferable for either.

For instance, in the silver-metal casket whose four tones of red interior fabric were planned for women, the pale pink side of the pillow was specified for women with dark hair; the deep rose fabric of the reverse side would serve for women whose hair was grey or white or blonde.

For each casket styling, a set of appropriate clothing-color recommendations was created. In caskets whose color styling, inside and out, permitted effective use for either women or men, recommendations were made for men's and women's apparel, in many cases differing because of the particular requirements imposed by the features and coloring of the two sexes.

Specifications also provided a background color against which the casket might be seen to best advantage, a color for the carpet runner leading to it, preferred colors for flowers, and a coordinated diffused lighting color. In short, all the consideration that is given to staging entertainment was provided for the vital emotional moment that few people are privileged to avoid — the last view of a loved one.

The professional service of making a reasoned, logical selection of casket is made possible for the funeral director by the very real power of color expressed in fabric. When the first group of these caskets was displayed at the industry convention, the funeral directors expressed a two-to-one preference for the new approach to casket planning. From a task of merely serving the need for a lining, the fabric has advanced to an assignment . . . through color . . . of doing a sales job for the product, for the manufacturer, and for the funeral director • *END*

Velvet, considered one of the appropriate fabrics for casket draperies today, is shown in the selected swatch in a soft beige tint, one of the favored colors for use in caskets.

Fabric by CROMPTON-RICHMOND

Satin is counted among the more suitable fabrics for casket linings, being supple and easily applied. In pale blue, it meets the present-day preference for pastel shades.

Fabric by BURLINGTON MILLS

From the
Portfolio of

GENTRY FASHIONS

The GENTRY FASHIONS Portfolio points up the trend towards the more subdued silhouette in men's clothing fashions. Herringbones, tiny sharkskins and quiet stripe combinations lend themselves perfectly to the new natural-shoulder look.

At right: Mr. John Barry Ryan exemplifies impeccable good taste in town wear.

JAMAICAN HOLIDAY

Another instance in which, by using the inspiration of color and design from a hitherto untapped source, textile manufacturers raise their product above the level of price-and-construction selling.

SLIGHTLY MORE than six hours after the British Overseas Airways' *Speed Bird* stratocruiser took off into the chill winds of Idlewild International Airport, members of the AMERICAN FABRICS editorial board debarked at Montego Bay in Jamaica, British West Indies. Accustomed to the differences in foreign lands, their first minutes on this tiny island were still a shock. For even in the dimming light of the sunset hour it was evident that neither color film nor word pictures had ever conveyed the true lushness of Jamaican color. Here, they felt at once, was the one *different* corner in all the Carribean countries; it possessed, for those able to translate Jamaica's natural colorings into salable textiles, almost unlimited inspiration.

They went not to find source material in the textiles worn by the islanders; for, having virtually no facilities for producing fabrics, Jamaica imports almost all of its cloth from the mother country and its dominions. But they had been told that the foliage, the wild life and the waters surrounding Jamaica possess tones and tints of a peculiar distinctiveness; and they were not disappointed. For some reason known to Nature alone, on and around this island the colorings are richer and warmer and more vivid than anywhere else; even on islands separated from Jamaica only by a few miles there is not the warmth of Jamaican colors.

The first stop was the Casablanca Hotel in Montego Bay, long a favorite resort among the world's fashion and social leaders. The calm and Old World-ness of this fine hotel were a surprise in its surroundings; and yet in the warm evening it was more understandable, when the natives floated beneath the hotel's waterside promenade and in their huge banana boats staged songs and dances which their ancestors brought over the ocean from Africa. Several days later AF's editors moved on across Jamaica's north shore; at every curve in the road the countryside and the ocean presented new colorings and combinations of tonal value. A pause at Silver Springs, and then on to Good Hope, one of the earliest buildings erected on the island. Set high in Jamaica's mountains (the island boasts an altitude at one point of 7,000 feet!) the Good Hope still retains the original Adam Brothers architecture and fittings; and although it is today maintained as a most comfortable hotel especially favored by those who like

Magnificent Good Hope

the Ubiquitous Cling-Cling

Solid Shaw Park

trail riding and golf, there is still the feeling that one is a guest in the home of a close friend.

After another short drive, they arrived at Tower Isle where in the center of this completely unspoiled and natural country a sharp curve in the road brought them face to face with a hotel of the most modern type. Newest of Jamaica's resorts, the Tower Isle boasts every guest convenience common to Florida, Southampton or California, and many which are unattainable in this country. It comes as somewhat of a jolt to find this superb example of modern design in such primitive surroundings; and yet it gives one a sharper perspective of the island's ancientness, of its total *naturalness* when one views the hills or the ocean from one of its airconditioned rooms.

From Tower Isle a short drive along mountain-flanked roads reminiscent of the Italian Riviera brings one to Port Antonio, ancient rendezvous of pirates, where the Hotel Titchfield sits perched on a hillside with a broad vista of the Jamaican hills on one side and the sea on the other. It is just offshore that Errol Flynn owns the tiny island which serves as anchorage for his yacht; and it is from here that he sails forth to hunt the big game fish native to the nearby waters.

Still further along the coast the road climbs up into the hills again until it reaches an eminence above San San Bay. Breathtakingly rugged is the scenery on both sides of the road; but when one gets his first glimpse of the Blue Lagoon, which is a water-filled crater of bottomless depth, he obtains a concept of the color blue which has never been limned on canvas or film by any artist. It held AF's editors for a long spell, until the guide reminded them that he wanted to reach Frenchman's Cove while

B·O·A·C

Caribee	*Red Stripe Beer*	*Saltfish & Ackee*
Montego Bay	*Fern Braw Hotel*	*Rice and Peas*
Coronation Market	*Half-Way-Tree*	*Yabbah (earthenware dish)*
Polo Team	*Pickapeppa Sauce*	*Cassava*
Royal Jamaica Cigars	*Tia Maria Liqueur*	*Higgler (street seller)*
Log Wood	*Casa Blanca Hotel*	*Banana*
Lena Levy	*Silver Sands*	*John Crow (bird)*
Cayman Islands	*Star Apple*	*Cling-cling (black bird)*
Savanna-la-Mar	*Monymusk Estate*	*Ping-Wing (cactus)*
Treasure Beach	*Appleton Special*	*Calabash (gourd)*
Maroon Town	*Rose Hall Estate*	*Blue Mountain Coffee*
Maggotty Cave	*Vale Royal Estate*	*Palisadoes*
Booby Cay	*Gray's Inn Estate*	*Pork Chops*
Bluefields Bay	*Ganga (weed)*	*Leila Wilson (pianist)*
Parottee Bay	*Tobacco*	*Queen of Spain's Valley*
Mahoe Bay	*Four Aces (cigarette)*	*Liguanea Plain*
Dolphin Head	*Wahoo (fish)*	*Rio Cobre (river)*
Bucknor's Bay	*Milk River*	*Martha Brae (river)*
Runaway Bay	*Port Maria*	*Rio Minho (river)*
Blue Mountains	*Ocho Rios*	*Duppy Gate*
Fort Augusta	*Manchioneal*	*Duppy Farm*
Ringtail Hall	*Buff Bay*	*Sunset Lodge*
New Battle	*Calypso*	*Lawrence Tavern (village)*
Argyll Pen	*Mango Walk*	*Sugar Hill (nightclub)*
Locust Tree Pen	*Bustamante*	*Barracuda (fish)*
Galleon Harbour	*Henry Morgan Rum*	*Blue Marlin (fish)*
Mount Diablo	*Pear Tree Grove*	*Navy Island*
Turnberry	*Land of Look Behind*	*Goat Island*
Golden Grove	*Cockpit Country*	*Curry goat (dish)*
Thatch Valley	*Port Royal*	*Blue Hole (lagoon)*
Fern Gully	*Mammee Bay*	*Cherrymoya (fruit)*
Sugar Loaf Peak	*Guava Ridge*	*Gimblin (fruit)*
Yallahs River	*Breadfruit*	
Hollis Savannah	*Ackee*	

Colorful staff attire at Silva Sprague.

the sun was at its highest.

Unless the visitor knows exactly where to look, he will never find Frenchman's Cove. It is hidden beyond a thicket of coconut palm trees, snuggled between two fairly high hills, and this most beautiful of all Jamaican spots must be pointed out by a native familiar with the terrain. Picture, if you will, a flat area approximately an eighth of a mile square; coconut trees liberally dot the site. As one passes through the trees he gains a glimpse of a scimitar of water of unusual hues ranging from lightest copen to deepest blue, and bounded by a coral reef some two hundred yards from shore. At the left of the Cove is a freshwater river which tumbles down from the hills and cascades over rocks to make an exquisite waterfall, and then culminates in a crystal clear pond which empties into the ocean. This is Frenchman's Cove, so named (according to legend) after a French mariner who leaped from the decks of a pirate ship after he was captured at sea, and then swam ashore to this spot.

* * *

This recounting of the travels of AMERICAN FABRICS' editors is not intended as a travelogue but to convey some small portion of the inspiring beauty and lush color-values of Jamaica. They brought back with them specimens of native foliage, water color

please turn the page...

Plaids — an Island Favorite

Jamaican Holiday . . . concluded

sketches of birds and fish, berries and fruits . . . and brought them to several of the textile industry's most visionary people. It took little explaining, and no urging to have them adapt these raw materials into appealing as well as practical fabric designs. And the upshot was that, partially in time for this winter's resort season but mainly for next summer, a wide variety of apparel for men, women and children will appear in the nation's finest stores . . . bearing the imprint of Jamaican Holiday.

In this manner is Creative Thinking originated and then applied to the problems which beset the producers of textiles. It is apparent today, to a degree which need not be discussed, that if textiles are to be sold at a satisfactory profit rather than on the basis of count-construction-and-price, then it must have within its weave or design or color some emotional force which will first of all provide the manufacturer with a promotional vehicle and then entice the ultimate consumer to pay out her good money.

The Jamaican Holiday

a gay cotton dress originated by
Ceil Chapman
from a special Jamaican Color Plaid by
Galey and Lord

Eighteenth Century

TEXTILE

Machinery

A collection of rare prints of
various types of machinery used in
the making of textiles two centuries ago.

A Note Concerning the Collection of

TEXTILE MACHINERY

reproduced in this brochure

Albeit the illustrations reproduced here depict textile machinery which was in use two centuries ago, it is important to view these drawings with an understanding of the significant part they played in the development of the industry as we know it today.

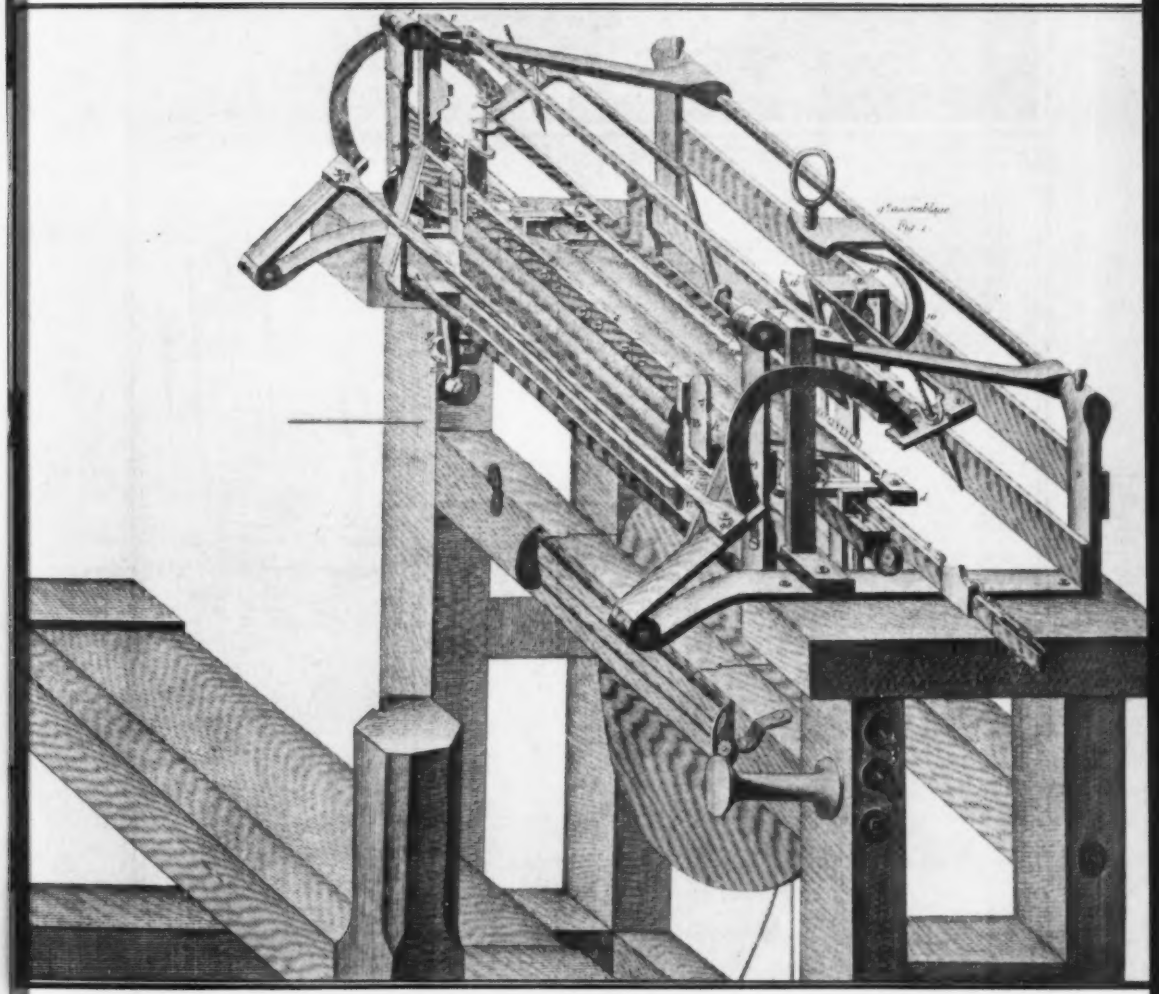
We are accustomed to the modern wonders of the equipment used today, yet very little of the ingenious devices which aid in the smooth operation of our enormous textile production is completely new; mainly they come under the head of refinements and improvements on basic methods and fundamental machine parts which were already established and in use some two hundred years ago, though in rudimentary form.

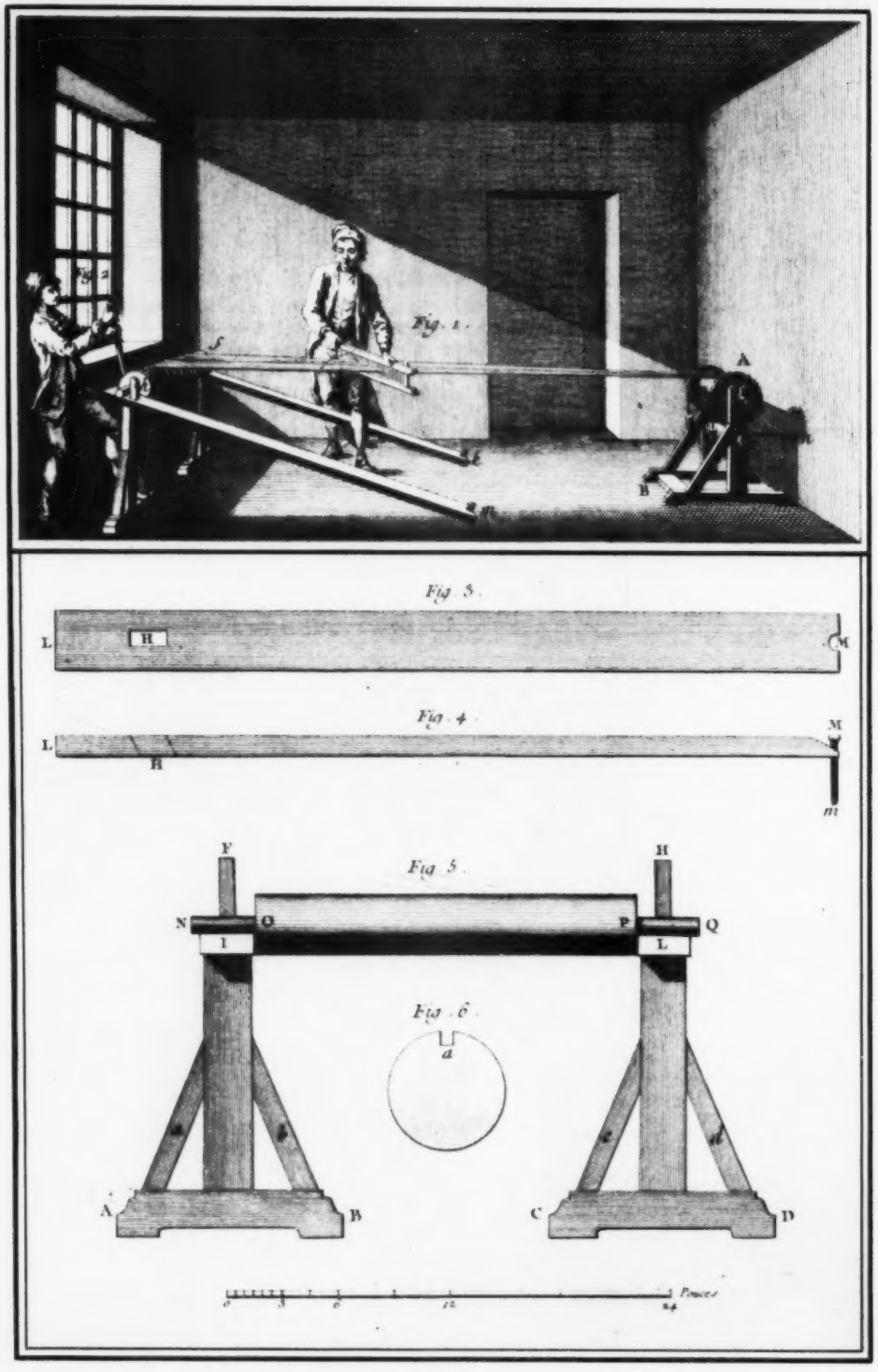
As the need, or the opportunity, for speedier and less costly operations came into existence, the thinking power of textile technology brought forth more streamlined parts and machines; found ways to attain greater speed, smoother flow, more uniform quality of production. This much must be admitted. Yet, as we have stated earlier, in the machines illustrated in the following pages you will find the forebear to virtually every major type of equipment being used today by the American and foreign textile industry.

These illustrations from the collection printed by J. H. Villard, Inc. reflect in the excellence of their steel engraving technique the high esteem and warm admiration held in their time for the old, fine looms of France and England. We present them as a valued addition to the collections of those who see in the textile industry the social as well as economic contribution it has made to our world.

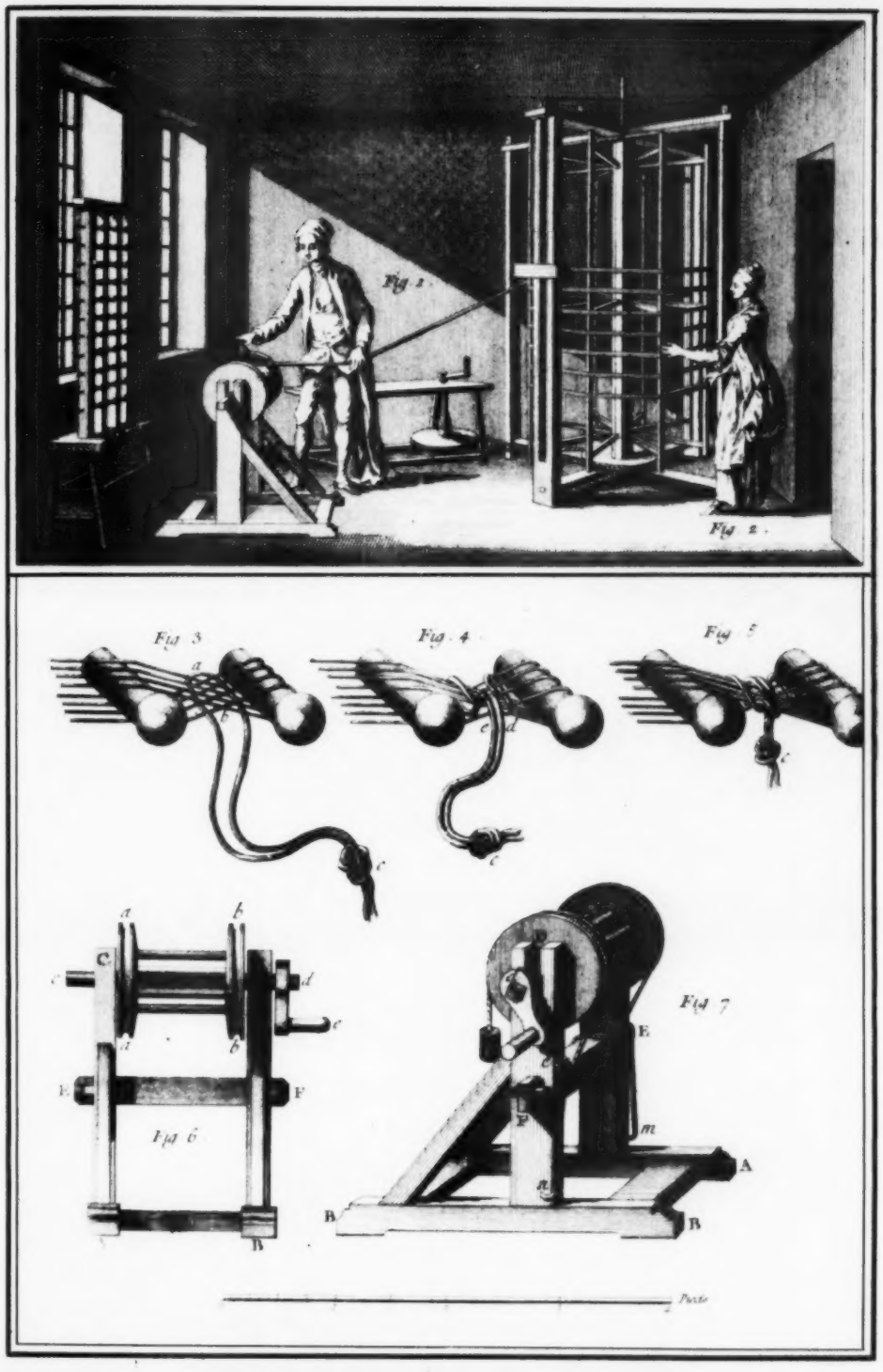
Full-Fashioned Hosiery Machine

This machine, on which only one stocking could be produced at one time, had many of the basic principles which are used in present-day high production machines. It had the spring needles and sinkers which we find in modern full-fashioned hosiery machines.

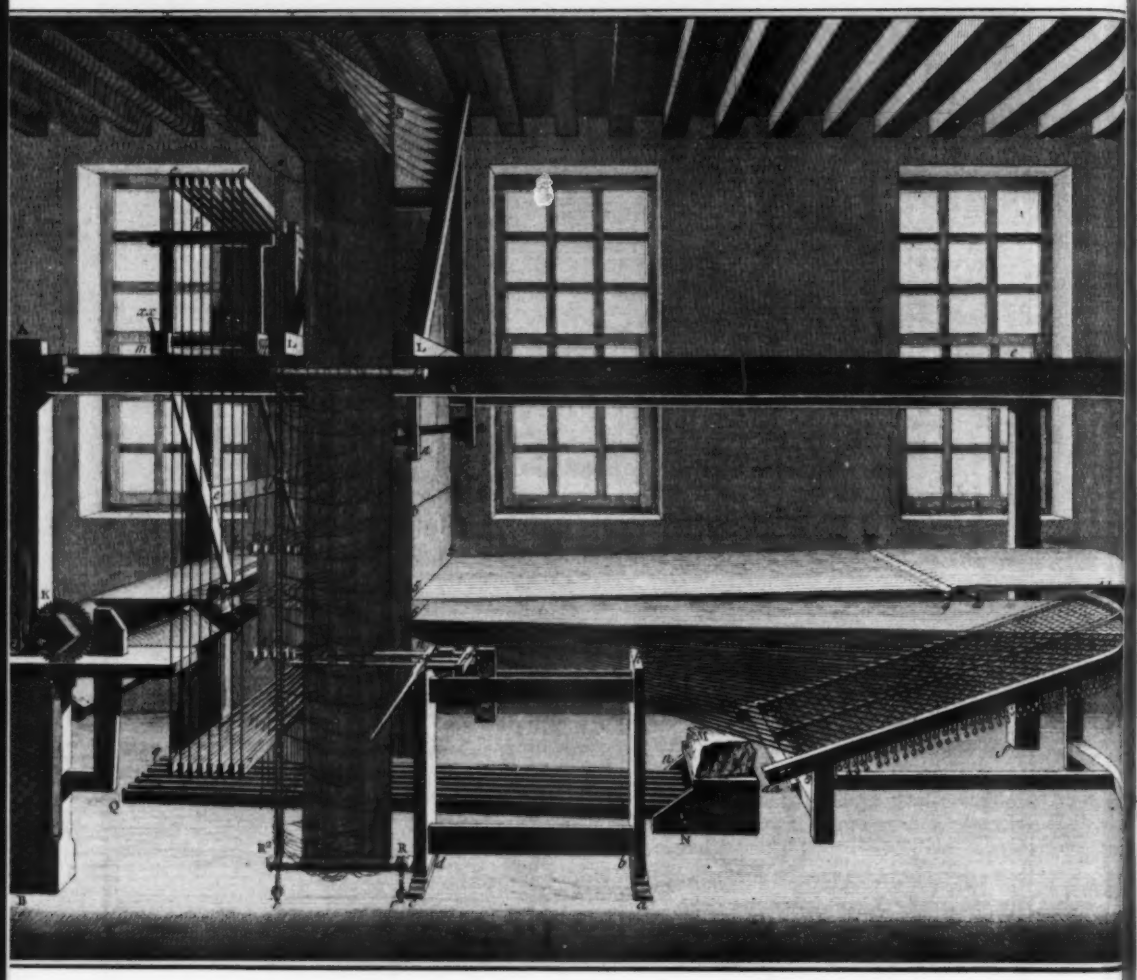




Beaming Machine **— The beaming follows the operation of the warping. The various threads are laid at the proper distance from one another by passing through the reed. The sketches in lower illustration show construction of the machine.**



Warping Machine — This machine differs from today's warpers in being vertical, whereas present-day warpers are horizontal. Relatively few threads were used at one time. In order to produce a warp with several hundred or thousand threads, the operation had to be repeated over and over again.



The Machine That was the

FORERUNNER

of the

FAMED JACQUARD LOOM

This was the predecessor of the present-day Jacquard machine. Most of the figured effects of brocades, pile fabrics, etc., could be achieved on this machine. Great physical effort was required to operate it and its production capacity was extremely limited.

Slasher — The purpose of this machine was to apply a required quantity of sizing to the threads which made up the warp, in order to make them run more smoothly through the heddles of the loom.

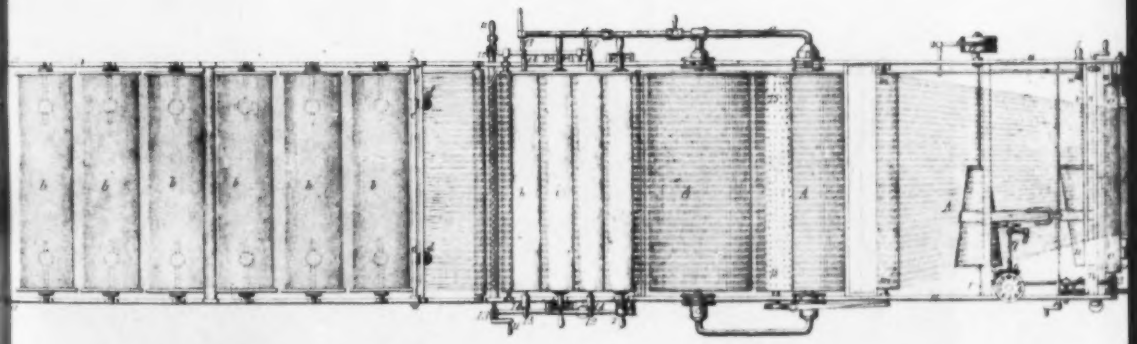


Fig. 2.

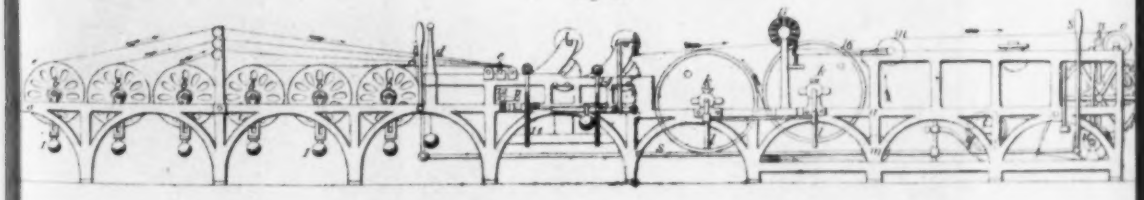
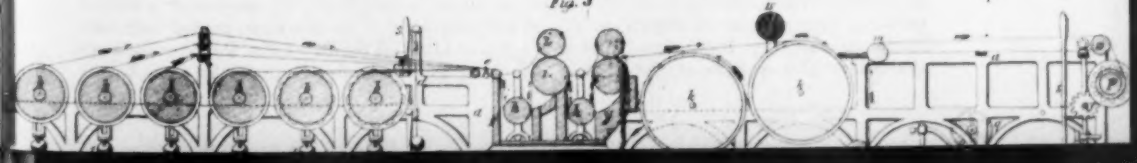
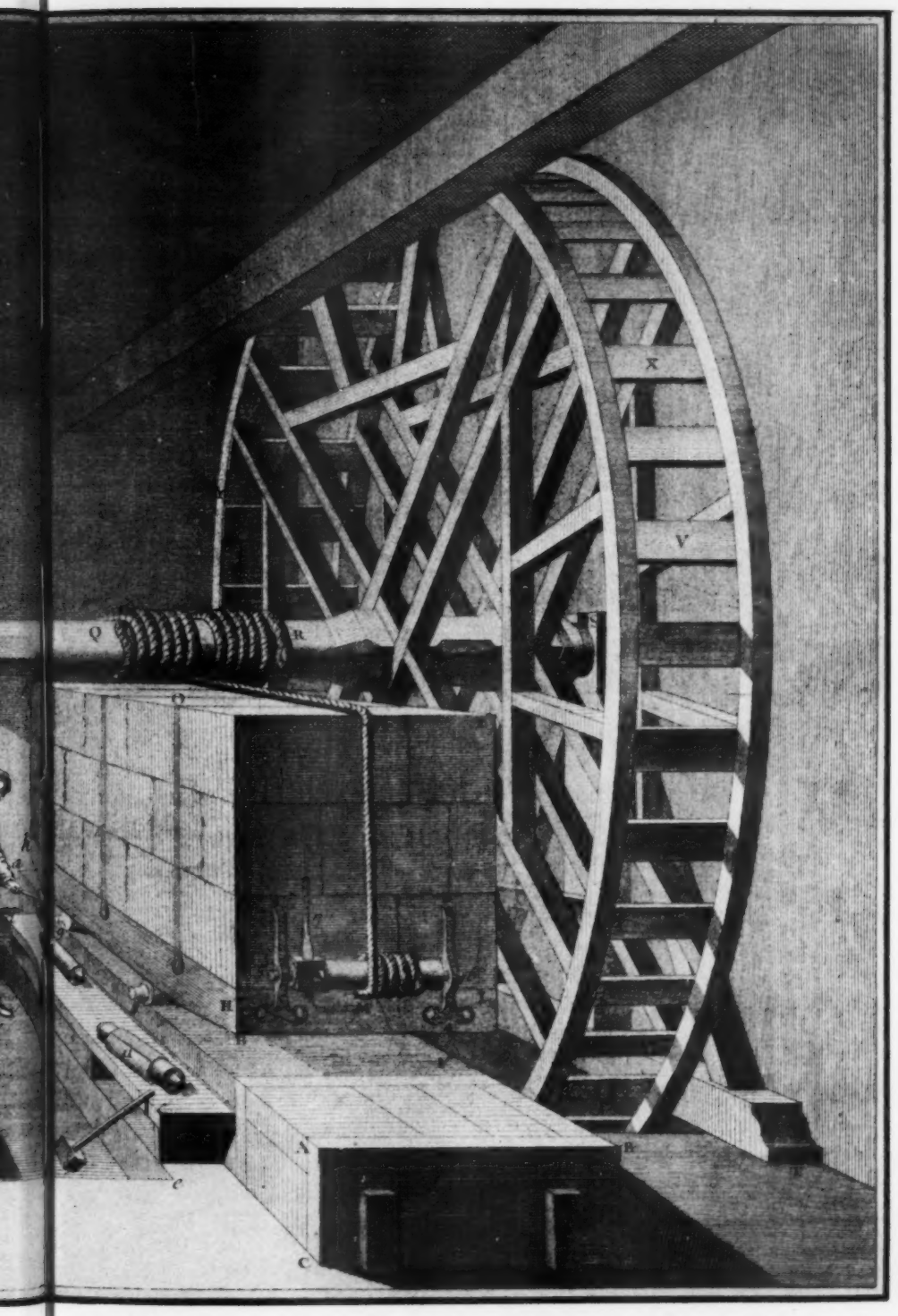


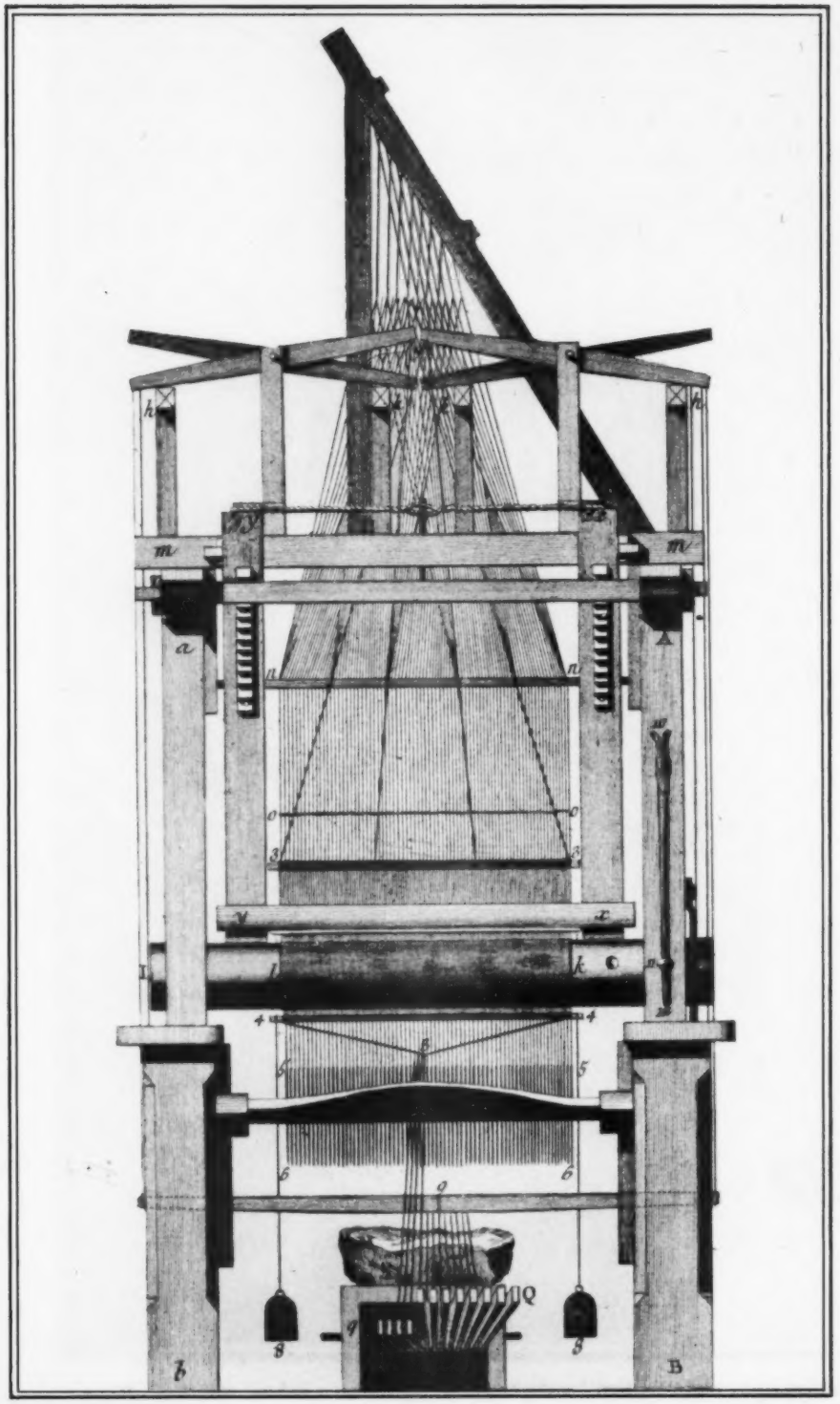
Fig. 3



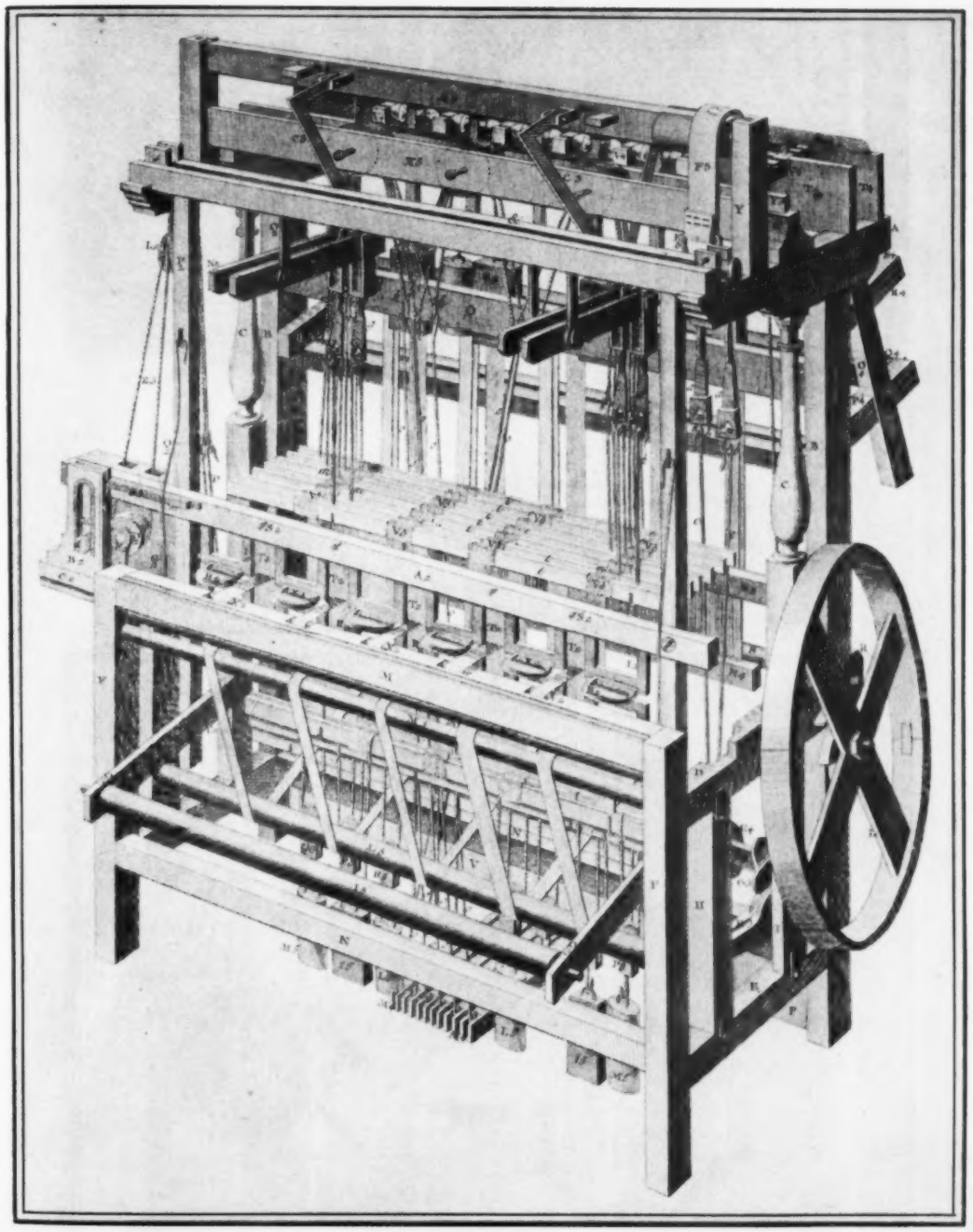
The Calendar — This machine was used for the finishing of fabrics which, having been rolled on an *arbor*, were placed by means of a mallet under a heavy stone mounted on a wooden platform. The machine would roll first forwards and then backwards, giving a special kind of finish to the fabric rolled on the arbor, the surface marks of one layer making their imprint on the next layer.



The machine was set in motion by the treading of two men lodged within a wheel, treading first forward in order to move the stone to the right over the fabric, and then making a turnabout to move the stone in the opposite direction. The treading was necessitated by the absence of water power, and the turnabout by the absence of a clutch. The illustration itself is a fine example of 18th-century draftsmanship.



Draw Loom — **Another view of the loom which made brocaded and other figured fabrics.**



A Narrow Fabric Loom — One of the earliest narrow fabric looms on which a wide variety of ribbons and other narrow fabrics could be produced.

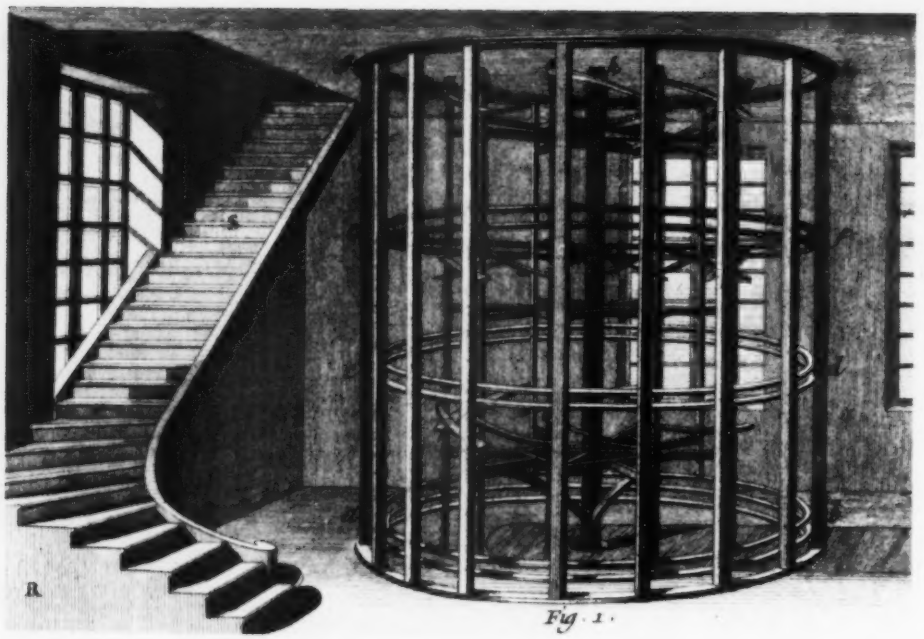
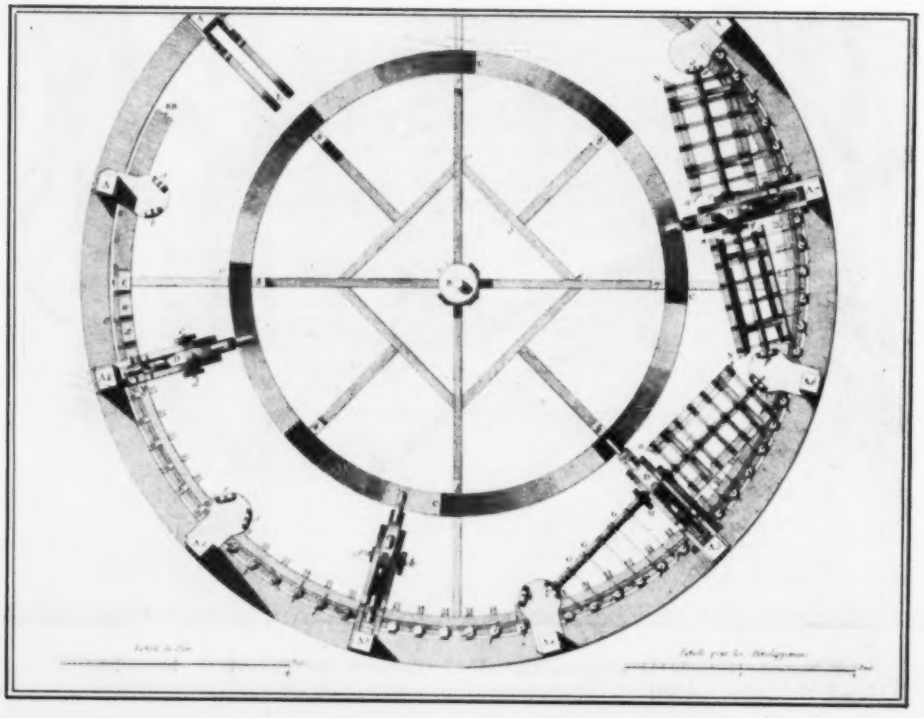


Fig. 1.

Throwing Machine
of
Two Centuries Ago . . .



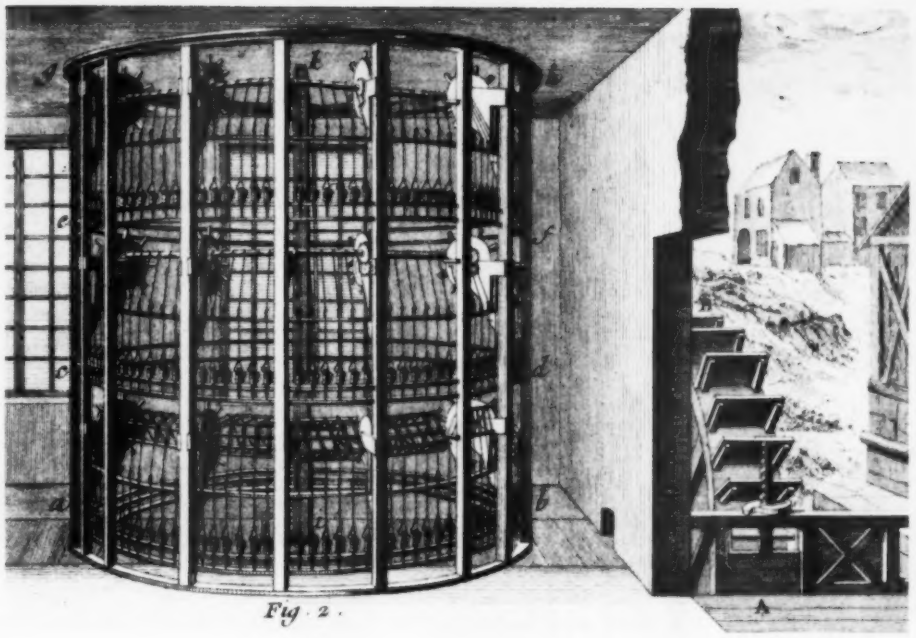
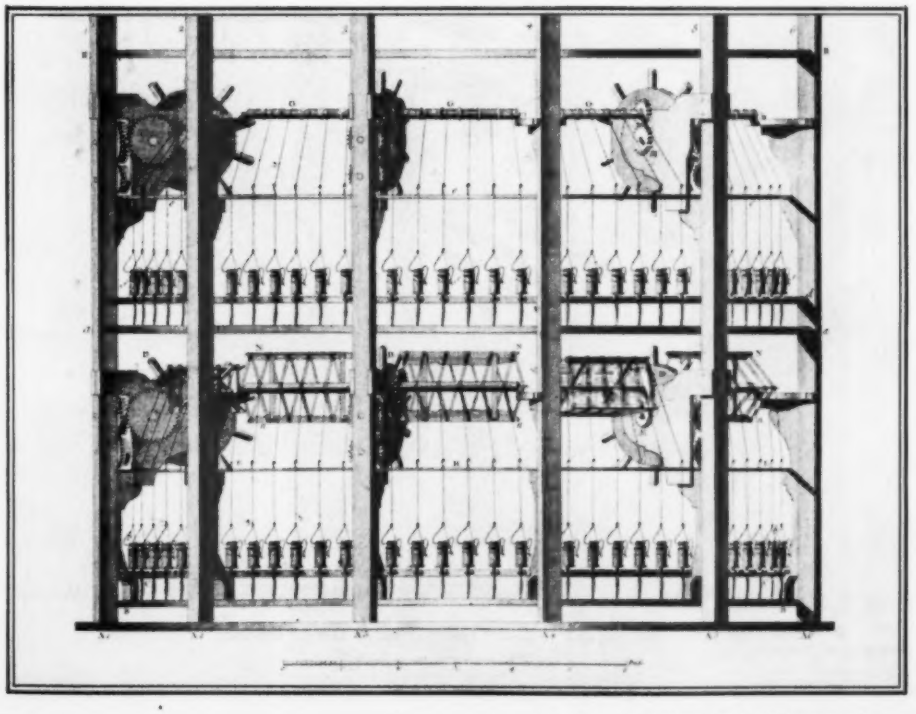
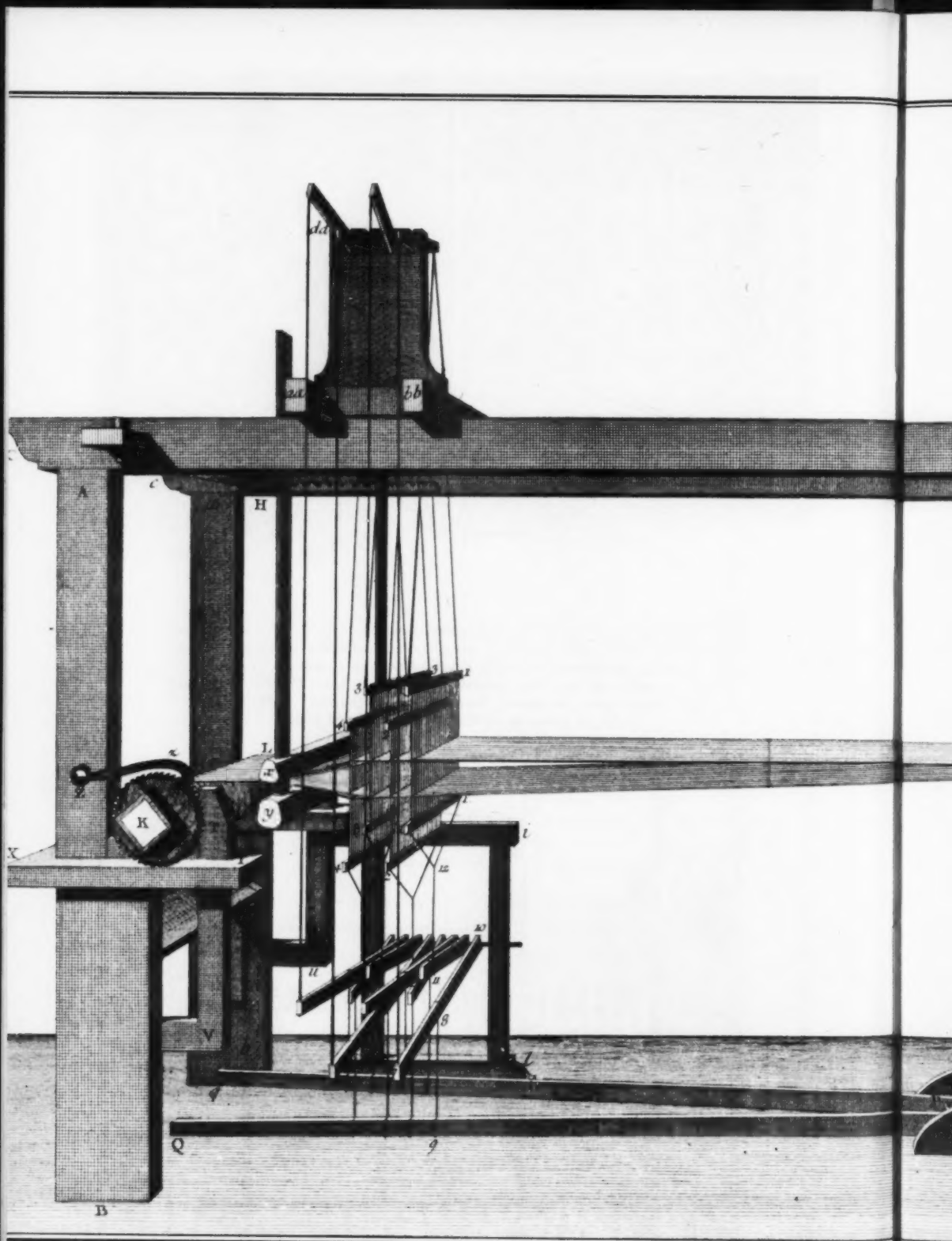


Fig. 2.

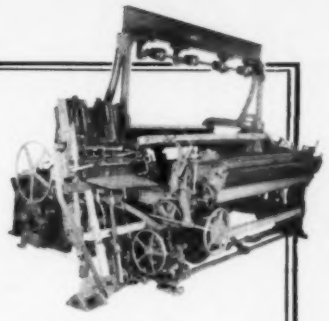
The throwing machine of the eighteenth century looked like a merry-go-round and was driven by a water wheel (see illustration above). Present-day throwing machines are built length-wise and resemble to an extent certain models of twisting machines. The purpose of the throwing machine was to give a required degree of twist (tension) to the thread in order to adapt it to the purposes of the fabric.



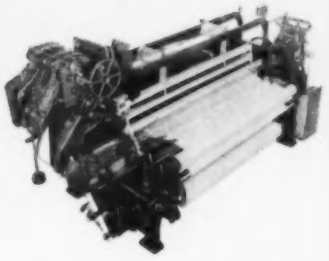


A Plain Loom . . . for weaving plain fabrics or twills or satins.

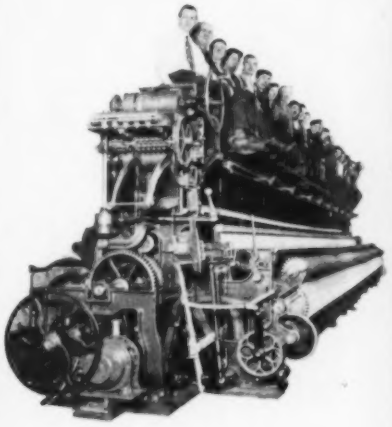
Modern Looms



1. Loom for weaving woolens, worsteds and upholstery fabrics.

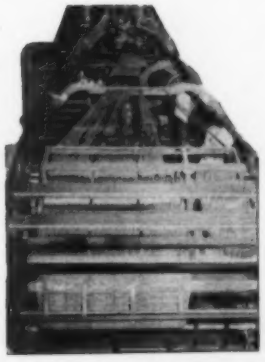


2. A Felt Loom . . . one of the widest in the world.



3. A Duck Loom, for weaving duck in a wide range of widths and weights.

Photos from Crompton & Knowles Loom Works



4. End view of lace machine showing Jacquard and Bars entering machine.

Eighteenth Century

TEXTILE

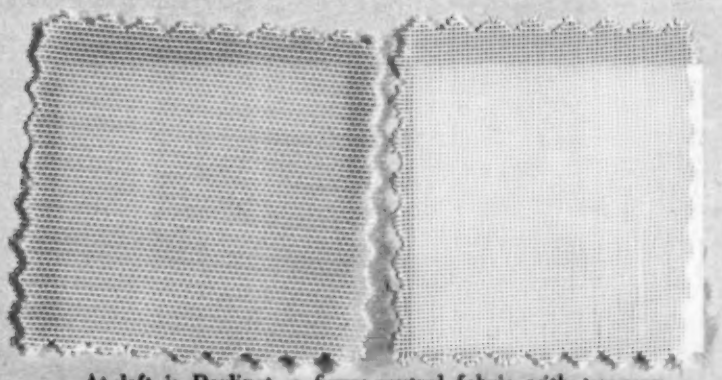
Machinery

A collection of rare prints of
various types of machinery used in
the making of textiles two centuries ago.

Nineteenth century satirists lampooned clumsy whalebone stays which replaced elaborate lacings of earlier times

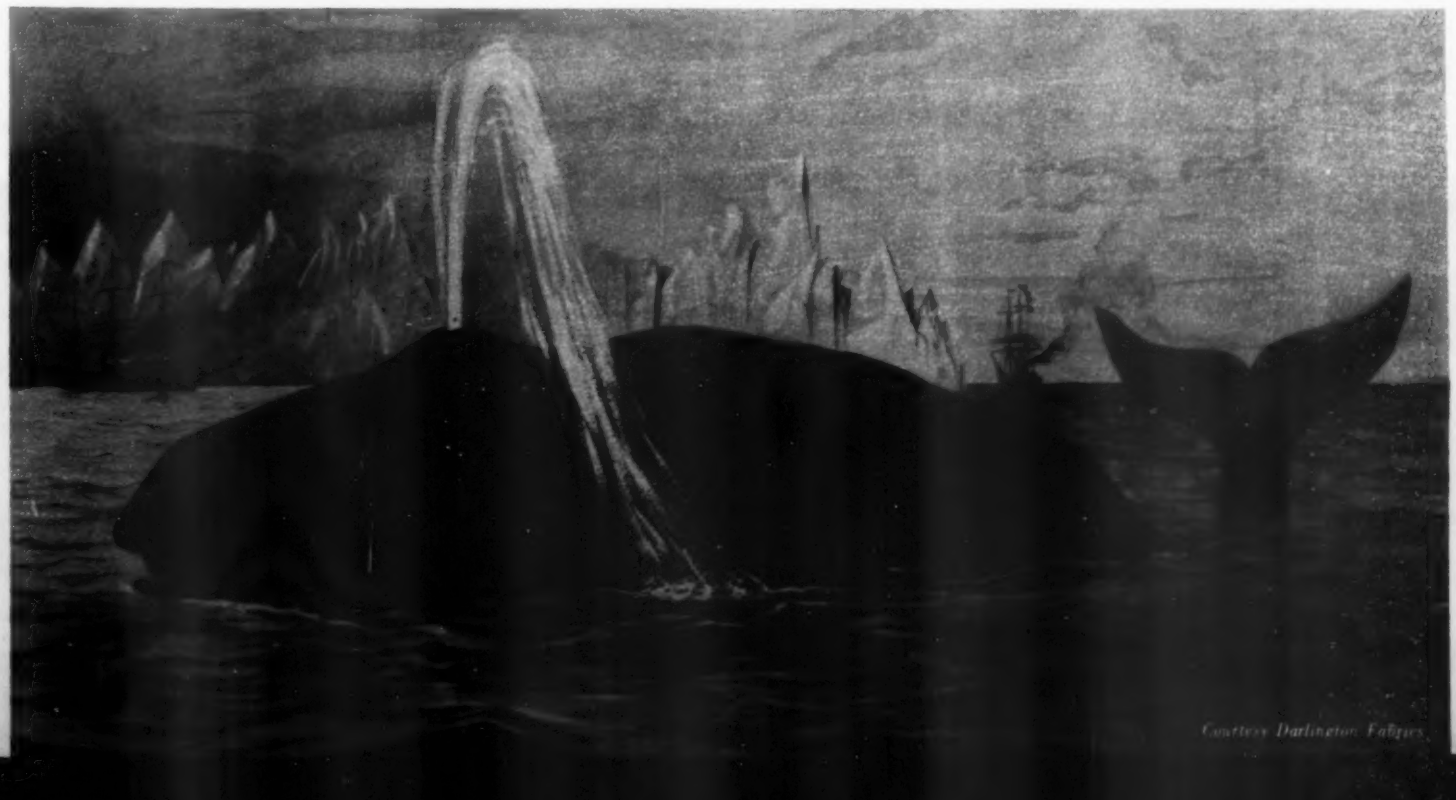
Elasticized Fabrics

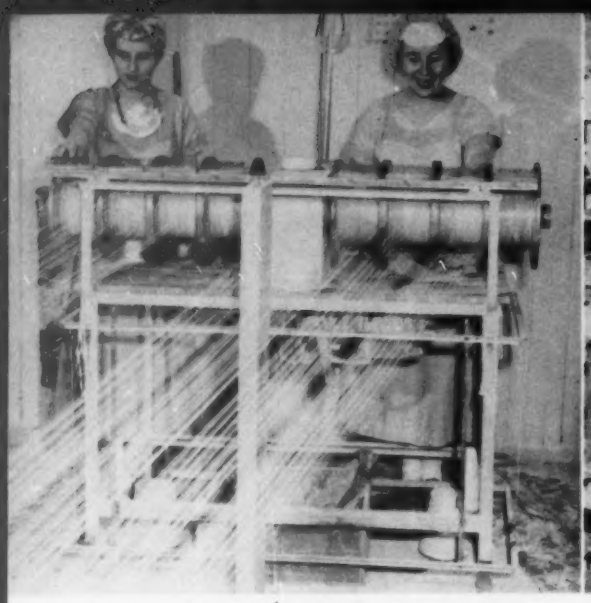
For key manufacturing steps in the making of elasticized fabrics, please turn the page . . .



At left is Darlinet, a figure-control fabric with two-way stretch construction. At right is a one-way stretch Leno weave of open construction. Both fabrics by DARLINGTON.

Firms with an interest in the precarious whalebone industry quickly turned to the potentialities of elasticized constructions





1. Bare rubber thread is fed onto beams in preparation for winding

2. Winding the yarn in preparation for covering the rubber thread

3. Covering the rubber thread with cotton, nylon or rayon yarn

For *Milady's Figure*

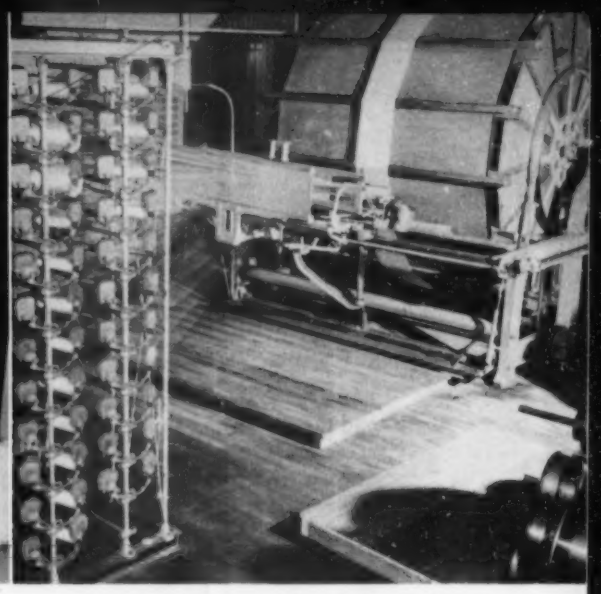
7. Slashing or sizing the yarn. Final preparation of warp for weaving

8. Weaving — the filling is shown being shuttled into the warp

9. Knitting — a modern machine making knit goods from elastic yarn

4. Coning inspected elastic yarn for subsequent weaving operation

5. Final inspection of the coned elastic yarn for weaving

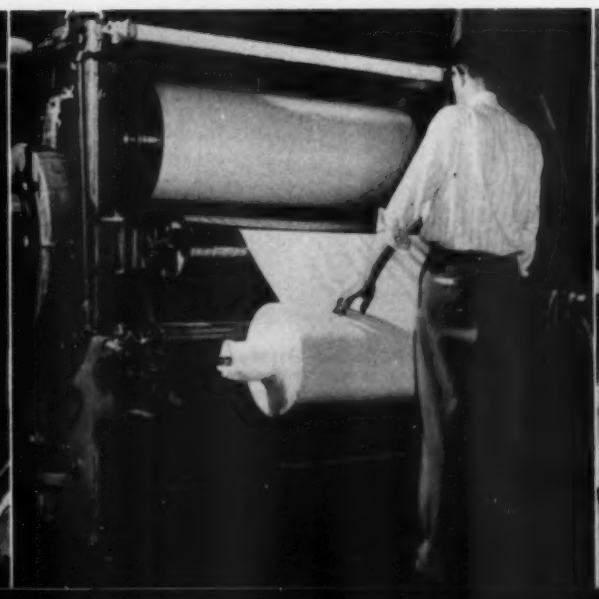


6. Warping on high-speed machines in preparation for weaving

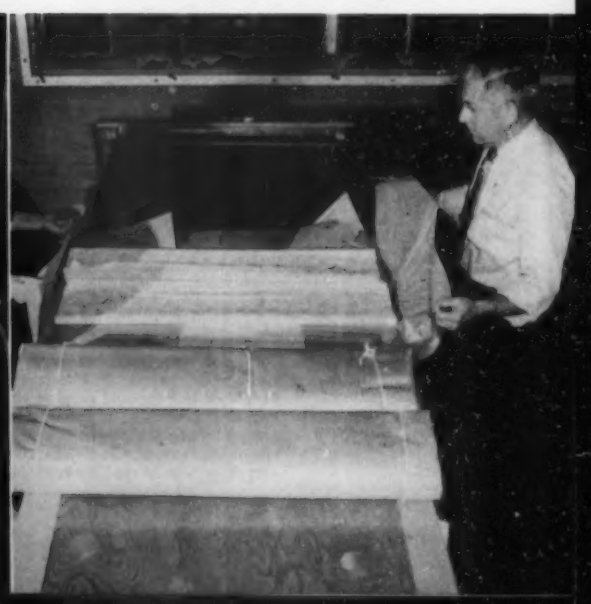
THE PROCESSES AND STEPS IN THE TRANSFORMATION OF RUBBER THREAD INTO ELASTICIZED FABRICS READY FOR THE DESIGNER'S ART ARE ILLUSTRATED IN SEQUENCE ON THESE PAGES

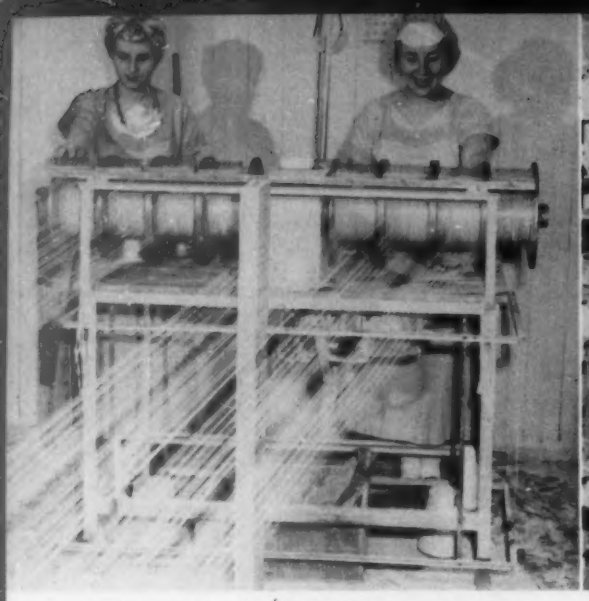
10. Dyeing the goods after the weaving or knitting process is complete

11. Special care is required in finishing elasticized goods



12. Final inspection and wrapping of finished goods before shipment





1. Bare rubber thread is fed onto beams in preparation for winding

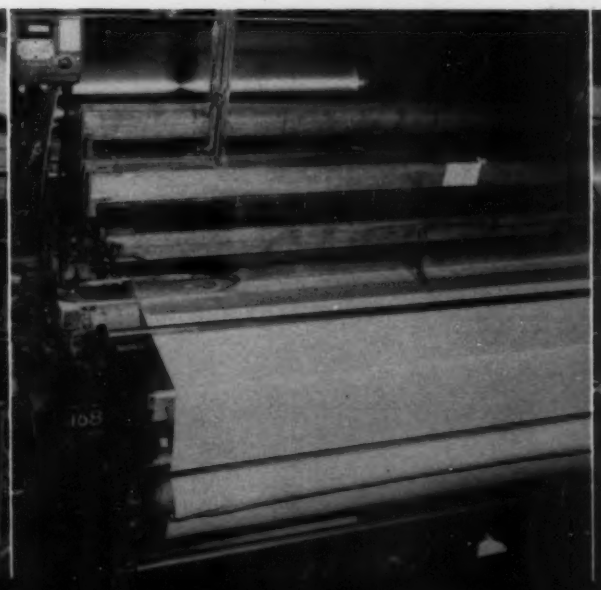
2. Winding the yarn in preparation for covering the rubber thread

3. Covering the rubber thread with cotton, nylon or rayon yarn

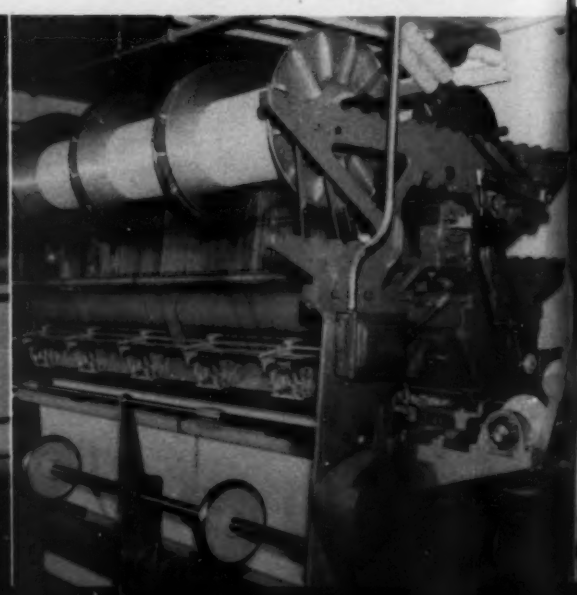
For *Milady's Figure*

7. Slashing or sizing the yarn. Final preparation of warp for weaving

8. Weaving — the filling is shown being shuttled into the warp



9. Knitting — a modern machine making knit goods from elastic yarn



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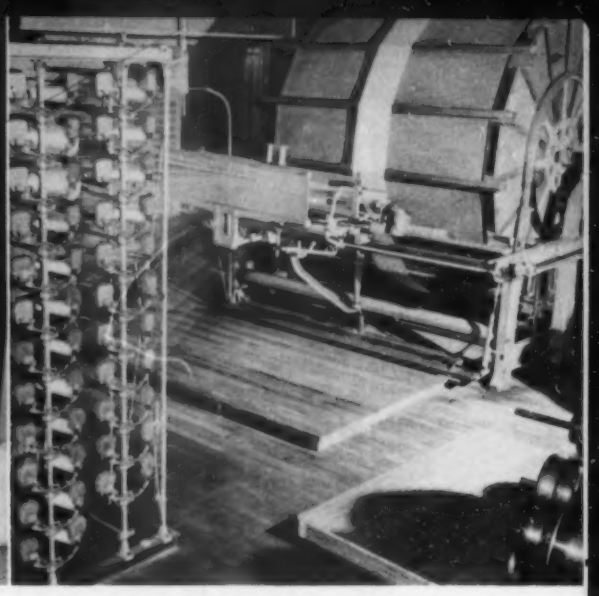

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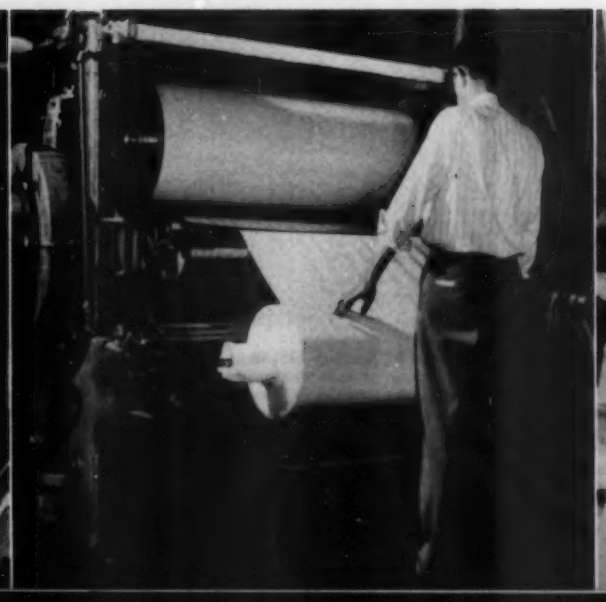

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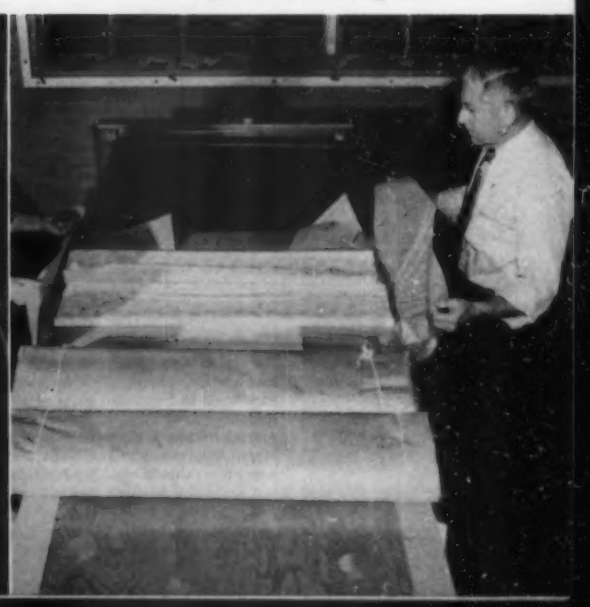


ON THE SHRINKING AND FINISHING OF WOOLENS

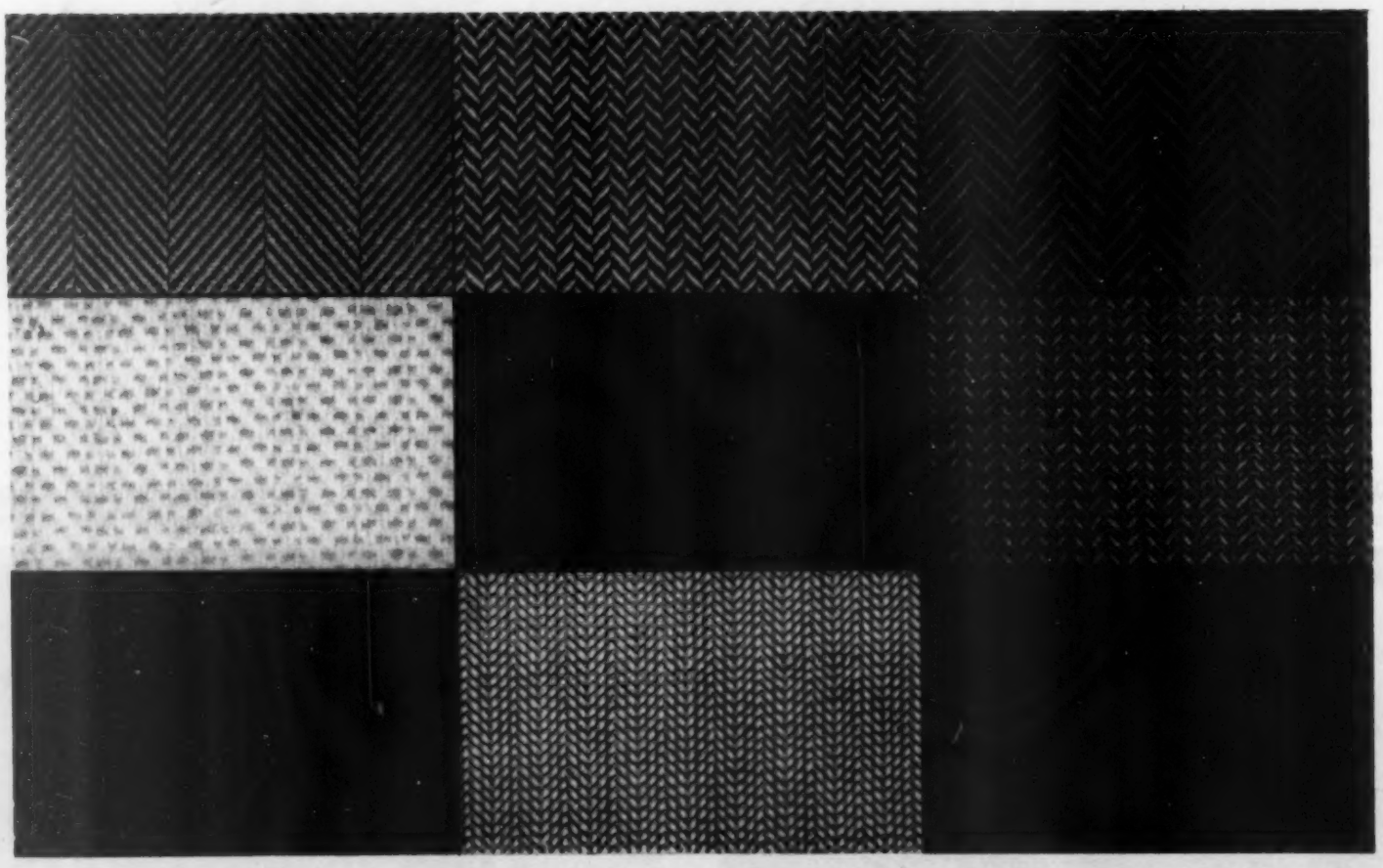
Today an ever-increasing complexity of techniques is available for perfect finishing of every class of woolen goods

THE APPLICATION of present-day scientific and technical methods and the increasing variety of fabrics and new constructions have created a demand for specialization without parallel in the long history of the shrinking and finishing industry. Much patient research and field trial of actual samples, often extending over years, have gone into preparing the response of the industry to the new demand. Today whatever the class of requirement may be . . . whether for processing soft- or flat-napped fabrics, gabardines, tropicals, worsted suitings, woolen coatings, knit or other fabrics, whatever their weight . . . the finishers can provide exact and appropriate formulae, proved and certain in operation.

The particular and great virtue of these formulae is that they are not rigid but can be varied in each case if there should be the least risk involved, due to some special circumstance. We list below some fifty categories regarded as basic and used today in classifying fabrics for processing by the finishing industry.

FABRIC	WEIGHTS	FABRIC	WEIGHTS	FABRIC	WEIGHTS	FABRIC	WEIGHTS
Bedford Cord	All	Covert	Plain	Knitted Fabric	All	Tricotine	Coating
Bolivia	Coating	Covert	Venetians	Mackinaw	All	Tweed	Dress
Boucle	Coating	Crepe	Dress	Melton	All	Tweed	Suiting
Blended	All	Crepe	Suiting	Manipulated	All	Tweeds	Coating
Broadcloth	All	Crepe	Coating	Needlepoint	All	Tropicals	All
Camels Hair	All	Donegal	All	Polo Cloth	All	Unfinished Worsted	All
Cashmere	All	Duvetyne	All	Poriet Twills	All	Velour	All
Cassimere	All	Eponge	All	Serge	All	Venetian Coverts	All
Cavalry Twill	Dress	Flannel	All	Sharkskin	All	Whipcord	Dress
Cavalry Twill	Suiting	Fleece	Coating	Shetland	All	Whipcord	Suiting
Cavalry Twill	Coating	Frieze	All	Suede	All	Whipcord	Coating
Cheviot	All	Gabardine	All	Tricotine	Dress	Worsteds	All
Chinchilla	All	Homespun	All	Tricotine	Suiting	Zibeline	All

The listing of fabrics is reproduced by courtesy from the working charts of American-London Shrinkers Corporation



ADDITIONS AND CORRECTIONS. Compilation of Terms, page 76, Summer 1951 issue — LASTEX: Registered trademark for an elastic yarn produced by U. S. Rubber Co. LATON: Rubber thread core with roving cover. RUBBER THREAD COUNTS: The number or size of the thread is based on a cross-section expressed in fractional parts of an inch. In cut thread the size number indicates one side of a square representing its cross-sectional area; thus, a "42" measures 1/42 inch. In round thread, the size number represents the diameter; a "50" is 1/50 inch in diameter. The relationship of cut thread sizes to extruded sizes is that of the area of a square to the area of a circle; thus, the 42s *cut* is the same as the 37s *extruded*. DULESCO, FIBRO, FIBROCETA, FIBROLANE, TENASCO and VISCA are registered trademarks of products which have now been assigned to and are manufactured by Courtaulds Limited. ASBESTON: should read *fire-resistant*. Page 130, Autumn 1950 issue, reference to FIBERGLAS FABRICS should read: completely launderable with excellent color retention in sun and washing.

letters to the editor

FABRIC NOMENCLATURE

TO THE EDITORS:

Your article *Let's Stop Calling Them Synthetics* in the Spring 1951 issue strikes a timely and pertinent note. I have long been detained by the idea that the terms *artificial silk* and *synthetic fiber* are misleading and unfair names, that there is a subtly implied derogation when we speak of a *synthetic,* and that a new nomenclature should be found.

However, we have such a variety of new fibers today, with such a diversity of properties, that a single and all-inclusive name would hardly be appropriate. Suppose we arrange the so-called synthetic fibers in two groups, as follows:

Group I	*Group II*
viscose rayon	Nylon
Bemberg	Vinyon
acetate rayon	Orlon
Vicara	Dacron
Ardil	Dynel
	Polythene

In Group I we list viscose, Bemberg and acetate rayons, all made from the cellulose of nature. We list Vicara and Ardil, manufactured from proteins in nature. The physical properties of the fibers of Group I are not exceptional.

In Group II we list fibers which are all man-made from chemicals. Their invention is the outcome of long research. Small molecules have been polymerized into very long linear supermolecules, thus fashioning a fibrous structure similar to the cellulose and protein molecules of nature. Of such fibers, only those have been marketed which promised greater strength, better wear, resistance and an all-round serviceability superior to any previously known natural fiber. These are truly noble fibers. The name is pat. They should receive the cognomen *Noble fibers.*

But what of Group I? The fibers of this group serve in innumerable ways in a market which demands service. They have a function, which they perform. What better name, then, than *Functional fibers?* Other regenerated fibers, such as Fortisan, Tenasco, etc., will naturally fall into the *Functional fiber* group.

Herman P. Baumann
Chemist
United Piece Dye Works
Lodi, New Jersey

TEXTILE SAMPLE COLLECTIONS

TO THE EDITORS:

We have noted that over the past year AMERICAN FABRICS has featured in several issues Clan Tartans, District Checks and Paisley patterns. In the light of this fact, we think you would be interested in knowing that this Museum, through a gift of the late Jacob B. Ziskind, has acquired an extraordinarily large collection of textile sample books and croquis which formerly belonged to the Arnold Print Works, North Adams, Massachusetts. Among the several hundred thousand samples are many Check and Paisley designs as well as many Plaids of French origin. Selections of these were shown in two exhibitions held in our Museum last year.

Besides the American prints the Ziskind collection includes many croquis and woven textiles of French manufacture. Many of the designs are very remarkable and surprisingly modern. We feel that the collection is an unusually rich source of design and color ideas for contemporary textile design.

Should you at any time wish to see this collection, so far as it is accessible, or make use of any of this material in future issues of AMERICAN FABRICS, we will be very glad to assist you in every possible way.

Rudolf Berliner
Rhode Island School of Design Museum
Providence, R. I.

GENTRY SUBSCRIBER

TO THE EDITORS:

I would not risk $8 on a horse named Gentry from an unknown stable, but I am delighted to back any new magazine from the stables of AMERICAN FABRICS. I enclose a check for my charter subscription and look forward with a great deal of pleasure to your first issue. I wish you every success with your new publication.

Erling H. Pedersen
Architect
Philadelphia

DESIRES TO PRESERVE A. F. ISSUES

TO THE EDITORS:

I am in receipt of your notices concerning the new publication, GENTRY, which you will introduce this Fall. Please enter my subscription as a Charter Subscriber.

I have always considered my subscription to AMERICAN FABRICS one of the soundest investments I've ever made. I feel certain that GENTRY will also take its place in the same category. It is essential to me that both publications reach me in the best possible condition through the APO system. Since items sent through this agency (and especially publications) are subjected to a considerable amount of handling and damage, and in order that these publications are insured to the utmost against such eventualities, you are authorized to bill me for any additional charges which may be incurred by your mailing division to make certain that I receive them in the best possible condition. I'm looking forward to preserving these magazines for many years ahead.

Gordon E. Modesti
American Consulate
Isfahan

PAISLEY AND MONAD

TO THE EDITORS:

For several years I have been saving anything in the nature of the Paisley design as associated with button decoration. I am a button collector and in my collection of nearly half a million old buttons, I have found about 350 bearing this design. Most of these are in the black glass medium (called *jet* by the unknowing) and there is no doubt in my mind that the design originated from the Paisley shawl influence, as the period of the black glass button heyday dated between 1850 and the turn of the century. The black glass itself was in commemoration of the Queen's mourning and the Paisley design was chosen because of its popularity and its many possibilities for variation. I have the Paisley pattern on buttons made of red glass, black glass, custard and white glass, celluloid, enamel, brass, brass and glass, brass with steel points, and others. Your Spring 1951 issue on Paisleys, therefore, is understandably important to me. I have never seen anything like it.

I have gone into research as to the origin of this design and yours is the first instance of associating this with the closed-fist idea.

I am enclosing several buttons which illustrate my points.

I have another problem which might have been a scourge to your researchers in working on the Paisley design. This is the Monad. I hope one day to connect the two . . . the Monad and the Paisley . . . to complete the article I have started for our National Button Bulletin.

The Monad is supposed to be even older than the Paisley, and its definite meaning seems to be that of *Creative Source* or, more specifically, *God.* The single Monad looks like a greatly enlarged comma or apostrophe or, to get down to earth, a very fat Schmoo or a tadpole. The Monad, used doubly, becomes the Chinese Yin-Yang symbol for things in opposition . . . darkness-light, male-female, good-evil, heaven-earth, etc. This double Monad form (actually the Duad) is also used in a variety of forms in much Gothic decoration. This two-way Monad is seen in church furniture, stained glass windows, and other church décor.

Progressively, the triple Monad (or the Triad) becomes the symbol of the Trinity and other associations where *threes* are concerned. The four-way Monad design becomes the Indian symbol, origin of the swastika, or the much touted Pennsylvania Dutch Hex and Barn Sign symbol.

In this search for material, I ran into the Book of Kells . . . the Illuminated Four Gospels. The frontespiece illustration employs the use of these Monads, Duads and Triads by the hundreds, and as this is a direct association with the early Coptic religion carried into Scotland after the beginning of the Christian Era, I am sure there is a multiplicity of reasons for their use. I hope one day to visit the Temple University where a copy of this rare book exists and from which I have a letter of permission to examine the script.

I have buttons also with all of these Monadistic arrangements which are as important to me as the Paisley.

I have talked of the Monad and the Paisley . . . I hope some day the twain will meet . . . sufficiently that I might prove the Monad came first with the Paisley pattern an artistic variation of it.

John H. Andrews
Paradise, Pa.

VALUES LASTEX STORY

TO THE EDITORS:

I have just finished reading your fine article on *The Inside Story of Lastex* in the Number 18 issue. The accompanying swatches are certainly a wonderful example of America's many outstanding textile developments.

As a subscriber to AMERICAN FABRICS I never cease praising the unusual beauty of your publication. Keep up the good work.

Kenneth L. Nathanson
Advertising
Fall River, Mass.

THE CONSUMER

The millman, the converter, the apparel manufacturer, the retailer, the retail clerk . . . all throw at Mrs. Consumer words and phrases as selling blandishment . . . all assuming that she knows what they're talking about. Sadly enough, it's gibberish to her. And so writer Cora Carlyle gathers a group of typical

Q. I have been learning to do hand blocking and am experiencing difficulty in that the materials shrink the first time they are washed, thus spoiling the design and the shape of the fabric. How may I overcome this?

A. Any material that is to be used for hand blocking should be carefully laundered in neutral soap and lukewarm water, and very carefully pressed *before* the blocking process. This is, of course, to make sure that practically all of the possible shrinkage has been taken care of. Your query implies that you have blocked some materials without pre-laundering. In this case, we would recommend that you send the materials to an establishment that has curtain stretchers where they can frame any piece of material and hold it firmly in shape while it dries.

Q. Please inform me if there is a chemical which I can use on nylon fabric so that I may press it into pleats. My point is that I would like to do away with ironing the pleats after each washing.

A. I am afraid there is no chemical treatment that will do this for you. For nylon pleats to be permanently pressed, they must be *heat-set* by the manufacturer before the material is made into garments. When this is done, the pleats will remain in the fabric for the life of the garment.

Q. I have been encountering trouble in finding a sewing thread that is strong enough for my purposes. I have read about a so-called *cable* thread which is advertised as being exceptionally strong and can be used *for all purposes*. Kindly explain this to me.

A. Cable thread is exceptionally strong since it is made up of three separate threads twisted together; consequently, it is much stronger than the usual sewing threads. You should, however, be sure to examine the thread so that you will not buy a type that is too large to go through the eyes of the ordinary needles, either for hand or machine sewing.

Q. Stoles, as we all know, are very popular today. Is there any special or correct measurement for them?

A. For summer wear stoles are usually 50 to 60 inches long and 10 to 18 inches wide, depending on the bulk of the basic material. These handy scarves have found such acceptance for general purposes as wraps that their popularity will undoubtedly continue for fall and winter. For the cold weather seasons, it seems to be decreed by fashion that stole lengths may run up to three yards long and about 25 inches wide.

Q. What are the differences among the terms *fire retardant, fire resistant, fire resistive?* I have seen these expressions in several advertisements, and am curious to know in what ways they differ and in what they are alike.

A. The differences among these terms, as yet, have not been clearly defined. The experts, however, generally use the term *fire resistant* and the term *fire retardant* interchangeably to mean that the fabric has been treated with some material which enables it to retard or slow up the spread of flame. The fabric will char, but the flame will not travel. The third term, *fire resistive,* is generally used to apply to a fabric which has been woven of fibers or filaments which will not catch fire.

Q. I have heard that there are some colors applied to fabrics which cause them to glow at night. Please let me know something about this.

A. There are several printers of high style fabrics who have announced that for fall and winter evening dress fabrics they will use these luminous colors which glow in dim light or in the dark. According to present plans, the fabric will not be completely dyed with these colors; the luminous effects will be part of a motif only.

Q. How can I remove grass stains from a linen dress? What is it in grass or foliage that makes these stains so difficult to remove?

A. Chlorophyll is the coloring matter in green plants which causes so much trouble in stain removal of this sort. Assuming that the material is washable, use ordinary soap and water and rub the affected area vigorously. If your dress is white and there are any remaining traces of the stain, use Javelle water to bleach it out.

Q. My home economics teacher, in discussing base materials used in the manufacture of rayon, mentioned first-cut and second-cut linters but did not differentiate between them. What is the difference, if any?

A. Linters are short cotton fibers removed from cotton seeds by a re-ginning or de-linting process. First-cut linters are those fibers removed in partially de-linting the seed by making what is known as a *light cut*. First-cuts range from 20 to 50 pounds per ton of seed. Second-cut linters are taken from the seeds when they are given a second run in the de-linting process. Linters in this instance range from 30 to 200 pounds per ton of seed. The bases for making rayon are cotton linters, or chips of pine, spruce or hemlock trees . . . all about 95% in cellulose content.

Q. What are the differences, technical or otherwise, between a plush and a velvet?

A. Fabrics with a pile effect of one-eighth of an inch or higher are referred to as plush; pile effect less than this height is referred to as velvet or velveteen. Plush and velvet are made from any of the major fibers. A plush loom is heavier than a velvet loom; plush is usually made in a 66-inch width in the loom and is finished at around 54 inches. Velvet is a more compact fabric with the filling picks and the pile construction woven in a rather tight order. Finished velvet runs from 36 to 40 inches in width. Both cloths can be made on double shuttle looms, thereby actually weaving two pieces of fabric together at the same time. The bottom piece weaves right side up; the top piece weaves upside down with the pieces controlling the height of the pile for each. When cut or split by cutting blades, the cut ends of the pile are used for the face of the goods.

WANTS TO KNOW...

Mrs. Consumers from time to time . . . asks them what they'd like clarified in textile terms . . . and then fires the questions at Dr. George Linton. Here is another batch. The moral is: Just because you know what you mean, don't take it for granted that the other person does.

Q. I was intrigued by a recent ad which mentioned a fabric called *tie silk rayon*. Can this actually be true?

A. The ad was incorrect. The material is probably either silk *or* rayon and the fiber content should have been clearly described. What the copy probably meant to imply was that the fabric was made of rayon yarn to appear like the well known fabric, tie silk. Most of this fabric is of a soft hand, usually made in twill construction on the order of surrah fabric. Ties of this type are very flexible and tend to gather and drape well. There is a wide variance in neckwear as to texture, quality, design and hand.

Q. A short time ago, I bought a pinch-pleated skirt and found it highly desirable because of its elasticity. Alas! after I sent it to the cleaners and it was returned to me, the pleats had vanished. Is it possible to bring them back?

A. There has been considerable trouble for some time with pinch-pleated rayon fabrics. The solution of the trouble would be that when these garments are sent to the dry cleaners, an explanation accompany them cautioning the cleaners not to wet-clean or steam them.

If a garment is cleaned only in solvent . . . that is, dry cleaned . . . the pleats will remain hard and sharp.

Q. What is *pineapple* cloth and what are its uses, please?

A. Pineapple cloth, or Piña, as it is popularly known, is made in the Philippine Islands and in China from threads obtained from the leaves of the pineapple plant. The threads are not twisted and look very much like horsehair when woven. The cloth is fine and silken-like, and possesses a distinct luster. A high point of the cloth is that it is naturally water repellent. It is used by the natives in the aforementioned countries for garments. In this country its uses are chiefly for tablecloths and napkins.

Piña fabric is thin and transparent, but gives excellent service. Some of the material is ideal for underwear. Efforts are now being made in the West Indies to promote an industry for making this fabric.

Q. I am doing some research in textiles for a museum, chiefly on cloths about which very little seems to be known today. Can you possibly let me have any information on these two fabrics . . . *bear cloth* and *half-thick?* My present sources offer no information.

A. While bear cloth has not been made in the British Isles, where it originated, for a great many years, the material may be compared with present-day Zibeline, a long, shaggy-napped women's wear fabric. Bear cloth, with its characteristic shaggy nap, was used for Ulster-type coatings which reached almost to the shoe top.

Half-thick refers to a fabric made of cotton warp and wool back; another cloth of this name was made with a double construction on the face of all-wool yarn with a cotton warp of high twist, to give strength to the goods during the weaving process. These versions seem to have been the forerunners of present-day backed fabric or Frenchback and double cloth, face-finished fabrics such as melton, kersey and beaver; these latter fabrics, however, are usually made with all-wool yarn.

Q. What is meant by a *certified* fabric, often seen in advertisements?

A. This refers to a material that has been endorsed by some well-known authority, such as, in the textile field, the United States Testing Co. or the Better Fabrics Testing Bureau. These companies maintain a service which attests to the quality, qualifications and fitness of a fabric or of merchandise manufactured and distributed by the members of their certified merchandise group. Standards of quality are kept by monthly shopping of products at stores in key cities throughout the nation. All certified merchandise has presumably met the necessary requirements before being approved.

Q. I have been having trouble in laundering with chlorine bleaches which eventually *tender* and sometimes yellow the fabric. Is there any other type of bleach which would not have harmful effects?

A. There is at least one type of bleach on the market which will fulfill your needs. Ask your dealer for a water-soluble powder product which has a peroxide base and will not harm fabrics nor affect washable colors. This type of bleach works a trifle more slowly than chlorine bleaches, but is fully effective. Another advantage is that it will not affect resin-treated fabrics which are now so widely used.

Q. My relatives in England have sent me some hand-woven woolen and worsted fabrics. Since I want to use some of the material for stormy weather wear, can you give me a simple formula for waterproofing the cloth? I would like to do the work myself.

A. If you can obtain the ingredients, a simple and effective formula would be 2½ pounds of alum, 2½ pounds of sugar of lead, and 2 ounces of finely cut isinglass. These agents should be placed in slightly warm water and the fabric run through the solution for about twenty minutes. Actually, our best advice would be that you have the work done by a professional.

Q. What material will stand the hardest wear in children's socks? The mortality is just too high for our pocketbook!

A. Children's socks made of spun nylon seem to have the best record for wear resistance. In addition, dirt washes off very easily and the socks dry in a short time. There is no shrinkage and the socks retain their shape.

Q. As you know, many of the flake and powdered soaps claim to wash clothes *whiter than new*. How can they actually do this? Do they contain a bleach?

A. These soaps and detergents do not contain bleach. They achieve the effect of whiteness because they contain a fluorescent dye which adds brilliance to both whites and colors. There can be no harm from them to the fabric.

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Margaret Macy Company, New York City

Miss America 1951, Yolande Betbeze, wearing the official Pageant gown especially designed and created for her in Paris by Pierre Balmain. The gown is made of Custom's white cotton satin, hand stencilled in gold. Miss America's jeweled medallion was created by M. Balmain for the 2,000th birthday of Paris. It was presented to Miss America by M. Balmain to commemorate her appointment in May as Special Envoy from the United States by the Bi-Millenaire Committee.

Richly Beautiful . . .
Fabulously Successful

EVERGLAZE* FABRICS

They are the success fabrics of the year! The name "Everglaze" is used for a broad, diversified group of fabrics distinguished for their washability, durability, wearability and lasting beauty; for their unprecedented combination of wonderful properties:

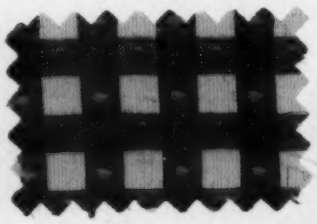
"Everglaze" fabrics possess wrinkle and crush resistance; spot, soil, shrink, stretch and mildew resistance; durable freshness and life. They are quick drying and readily launderable with surface texture, hand and all other qualities durable to washing and dry cleaning.

"Everglaze" fabrics are *properly* finished for their particular uses by exclusive and tested formulations and processes which transform inexpensive cloths into products of remarkable value.

Wearable year 'round, around the clock they have tremendous consumer appeal because

"Everglaze" fabrics have everything.

*A trade-mark signifying fabric finished and tested according to processes and standards controlled and prescribed by Joseph Bancroft & Sons Co.



With each new generation, it's love at first sight for Galey & Lord Cottons. And with each it's the love of a lifetime. For behind the appeal, there's lasting character—made up of skill and experience—and dedication to quality. No wonder Galey & Lord Cottons are a year around fabric tradition in America.

Galey & Lord inc. *fabrics from* Burlington Mills

57 WORTH STREET • NEW YORK

*Toni Owen separates in Bates DYNELON**

Bates
DYNELON*

A marvelous mating of dynel • nylon • cotton ...a revolutionary new fabric characterized by soft warmth, luxurious touch, absolute washability. Bates new DYNELON* tailors crisply, drapes gracefully, holds its shape and press, is unaffected by dampness, packing, sitting, is proof against moth and mildew. In many colors, many constructions, Bates DYNELON* makes exciting news in fashions that cost much less time, much less money. It is another Bates original...another Bates triumph. *TRADEMARK

BATES FABRICS, INC., 80 WORTH STREET, NEW YORK 13, N. Y.

Claire McCardell makes news of the good little black dress by her adroit use of
Bloomsburg's tucked crepe woven with Enka Rayon yarn—the yarn of fashion's finest fabrics.
Lord & Taylor, New York; Himelhoch's, Detroit; Lockharts, St. Louis; Ransohoffs, San Francisco.

ENKA RAYON

American Enka Corporation, 206 Madison Avenue, New York 16, N.Y.

AMERICAN FABRICS

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100% VIRGIN WOOL

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Look for this label ... it identifies the finest woolens in the world

FORSTMANN WOOLEN COMPANY
PASSAIC, N.J.

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American Fabrics

. . . dedicated to the belief that Fashion begins with the Fabric . . . that the American textile industry casts a major influence on the economic and social aspects of the world in which we live and that it has deservedly attained the world's pinnacle from which it can never be dislodged. To all who work within or with the industry this volume number twenty of American Fabrics . . . projecting the International Silk Association program for 1952, a survey of the achievements of modern designers in the textile field, and a report of a specific example of fruitful cooperation between design creation and fashion production . . . is offered as a measure of help, of service . . . and, we hope, of inspiration.

Board of Editors: Dr. George E. Linton, Cora Carlyle, Howard Ketcham, Alvin Lustig, John McKay Adan, Estelle K. Silvay, Capt. J. A. Murdocke, R. Bissing. Art Editors: W. Lully, Harry Hering, Joshua M. Weiner. Vice-president and Advertising Manager: Joseph C. Stein. Business Manager: C. I. Rohrlich. Circulation Manager: John Kelly. Asst. to Publisher: C. E. Fremantle. Publisher: Wm. C. Segal.

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Number 20 Winter 1951-52

American Fabrics

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WRAP OF LUXURY
IN RAYON VELVET

Phillip Mangone's sumptuous
theatre coat, sparkled with
sequins and furred with black fox.
In Martin's dark-as-midnight rayon velvet,
La Tosca, made of Avisco Rayon.
B. Altman & Co., New York;
Carson, Pirie Scott & Co., Chicago.

Avisco RAYON

"Avisco" is the trade mark for products of
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for example . . .

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by Goodman & Theise

Antique silk taffeta...aristocrat of fabrics...brilliant example of the creative genius evolved in the style studios of Stafford House.

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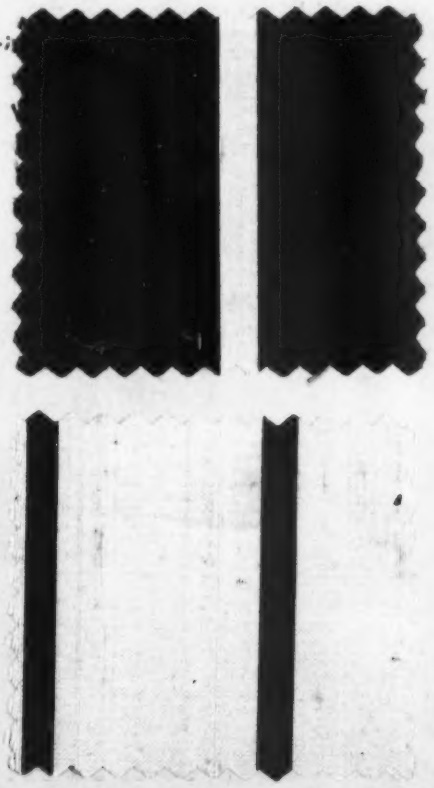

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is the

first consideration in a fabric

there is

no substitute for

A C E T A T E . . . . . .

the beauty fiber

By using Celanese* acetate we have been able to create a color-rich damas, luxurious to the touch. Celanese acetate adds to the good hand as well as to the beauty of the fabric.

*Reg. U. S. Pat. Off.

PIERRE DUCHARNE, PRESIDENT
DUCHARNE, INC

Celanese CORPORATION OF AMERICA, New York 16

•This cocktail costume created by Oleg Cassini in Ducharne damas woven with Celanese acetate.

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FOR WRINKLE RESISTANCE...

FOR STRENGTH AND LOFT...

FOR LOOKS AND HAND...

FOR EASY CARE...

A wonderful "mixer" is DYNEL, science's new, versatile fiber! In blends with rayon, for example, DYNEL adds strength, abrasion resistance, warmth, loft, wrinkle recovery, a more luxurious hand.

Robbins' new DYNEL-rayon gabardine gives exceptional wear, lasting good looks, extraordinary easy care. Warm without bulk . . . rich and mellow in hand and texture. Drapes and tailors beautifully . . . keeps its shape *and* built-in crease resistance. Unaffected by dry cleaning solvents. Smartly styled, in handsome colors, and—for all its luxury—attractively priced!

And to cotton and wool, DYNEL adds unique properties that provide easy care, durable wear, beauty of hand. DYNEL blends open new sales opportunities in many fields . . . bring exciting, permanent improvements to traditional fabrics.

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DYNEL-rayon Gabardine by Robbins Mills, Inc.

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DRESS BY EDITH FORNAROTTO

Here again, and more beautiful than ever . . . pure silk, wonderfully washable broadcloth from the Schwarzenbach Huber collection of fine fabrics. This great house, famous for its fashion leadership and high standards, again features pure silk shirtings famous in their own right . . . known and beloved by women internationally. Another opportunity to profit by the tradition of quality so intertwined with the name of Schwarzenbach.

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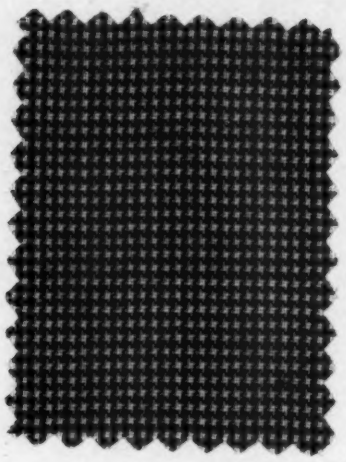
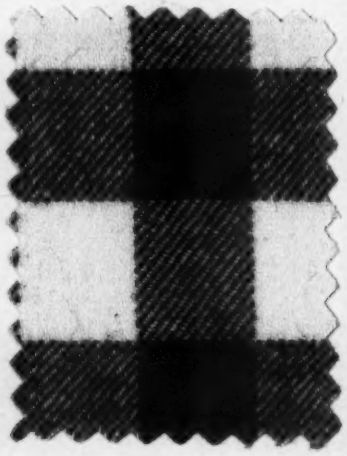
We have enriched wool with man-made fibers to produce new engineered fabrics that are superior to fabrics made of 100% wool. Look to Milliken for leadership in new fabric developments.

CUENELLA dress fabric. 87½% wool, 12½% nylon.



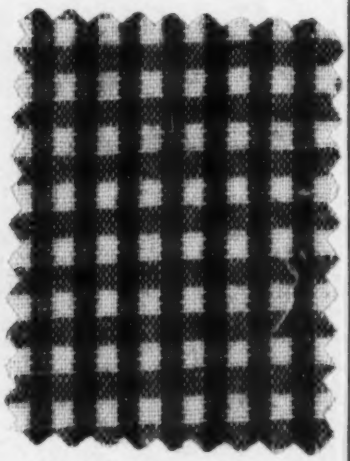
VISA suit fabric. 45% worsted, 55% Dacron.*

FEATHERON FLANNEL jacket, skirt and robe fabric, 85% wool, 15% nylon.



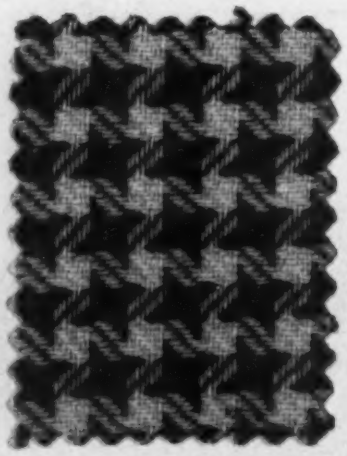
DONELLA sportswear fabric. 45% wool, 55% Orlon.**

BUNARA dress fabric. 65% wool, 20% rabbit hair, 15% nylon.

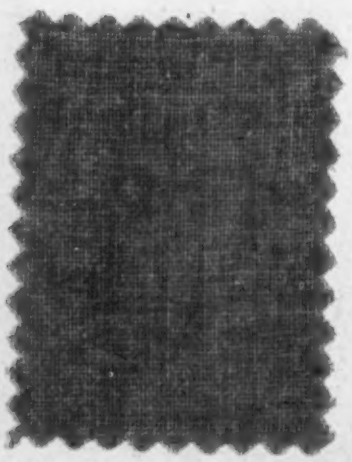


STABILON men's shirting, women's dress, sportswear fabric. 45% wool, 55% Orlon.**

*Du Pont trade-mark for its polyester fiber
**Du Pont's acrylic fiber



VICINETTE vicara, wool, nylon coat and suit fabric, 55% wool, 32½% vicara, 12½% nylon.



CASMET dress and sportswear fabric, 70% wool, 15% nylon, 15% fur fiber.

Milliken

WOOLENS

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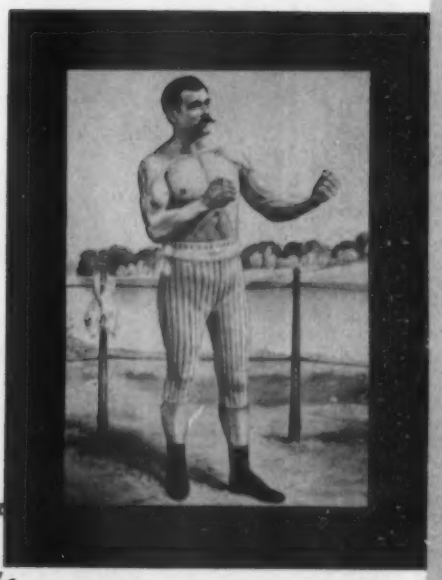

Toulouse-Lautrec and John L Sullivan
in the Winter 1952 Number

of **GENTRY**

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over sixty years of service to the trade

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member of the international silk association, (u.s.a.) incorporated

The superior quality of Strong-Hewat woolens can be attained only through use of the finest wool, most carefully spun, woven and finished. This has been the Strong-Hewat credo since 1898.

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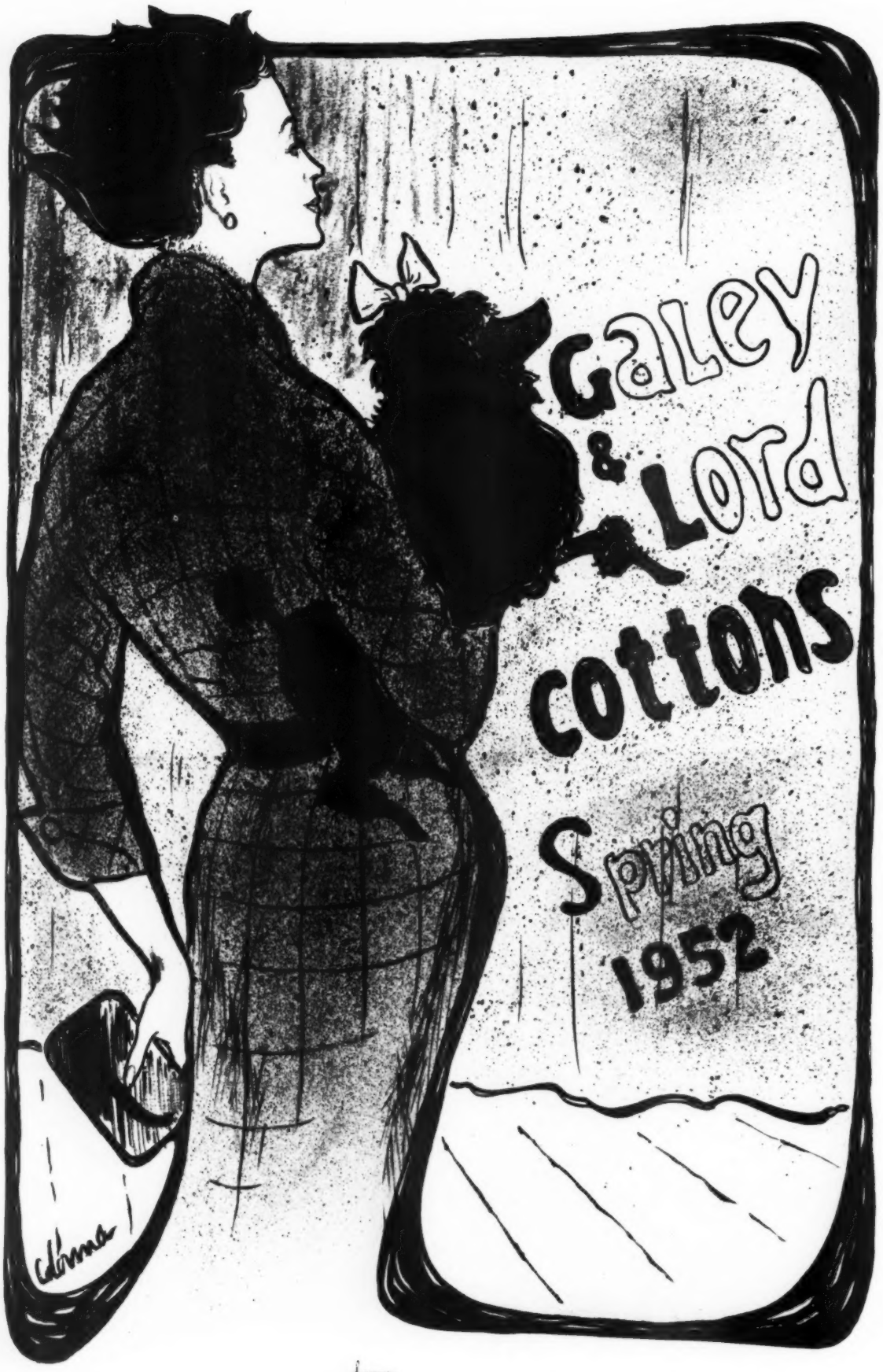
* * *

***GENTRY** in the Empire State Building, New York 1, N. Y.*



Galey & Lord inc. 1407 BROADWAY, NEW YORK, N. Y. *fabrics from* Burlington Mills

"NEEDLE AND THREAD...NEEDLE AND THREAD.
IT'S NOT THE WASHING...IT'S THE STARCHING I DREAD!"

Bellmanized All!

Fine cottons *never* need starching *when they're Bellmanized finished.* The finish builds the airy crisp beauty right into the fibers and it lasts the life of the cotton. That's why more famous names in cottons insist on the Bellmanized starchless finish for truly luminescent colors and crisp loveliness that stays!

(From top to bottom)

TACO'S Opaleen is a new star in airy printed cottons for youngest set fashions.

FULLER'S harlequin stripe organdie floats majestically into day and dance dresses.

BELCO embroidered organdies stay fluffy bouffant with their crisp finish.

DUMARI'S famous Powder Puff Muslins stay crisper without starch, were never lovelier.

WILLIAM LIND'S frosty white floral organdies make tots' frocks pure joy to sew, to wash.

FISBA'S fresh crinkle print organdies take to full, full skirted fashion.

BELLMAN BROOK Bleachery Co., FAIRVIEW, N. J.

Licensees for Sanforized, Tebilized (for Tested Crease Resistance), and "Heberlein" processes.

A replica in miniature of the beautiful poster, designed by Eugene Berman, which will be distributed to stores this month for their dramatic "World of Silk" promotions in February. This poster has been produced through the courtesy of the International Silk Association (U.S.A.).

Leaders in the World of Silk...

International Silk *Association (U.S.A.)*

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Lingerie by Seab
Laces by Ametex
American Textile Co., Inc.

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richard avedon

Monte Sano endows the suit of silk with a new spirit of simplicity... American Silk Mills endows the cloth of silk with wool and fine kid mohair for resilience, dry texture, and superb tailoring quality. This new Amer-mill Fabric is created by the nation's largest silk weavers...:

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& COMPANY, INC.

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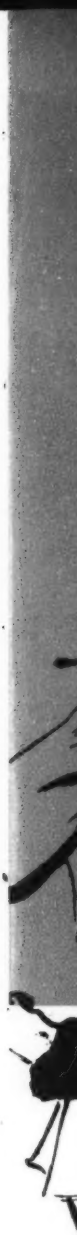
manufacturers of thrown silk

mills Littlestown Throwing Co., Littlestown, Pa.
Lackawanna Textile Co., Taylor, Pa.

450 Fourth Avenue, New York 16, N. Y. MUrray Hill 4-0775



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top tensile strength
utmost beauty

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PHILLIPSBURG, NEW JERSEY
Originators of the famous
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Brocade Splendor

Just as rich brocade is the fabric that lends special radiance to the evening scene . . . so beautiful Bemberg rayon is the yarn that gives special lustre and quality to brocades. Here, a superb example: the strapless short evening gown by Ben Gam in brocade woven by HAFNER of Bemberg and viscose rayon yarns.

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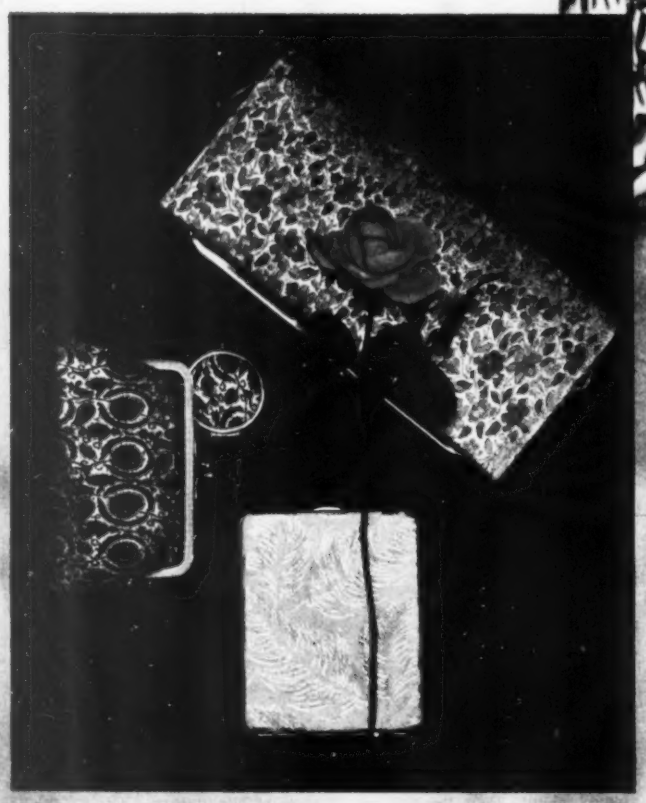
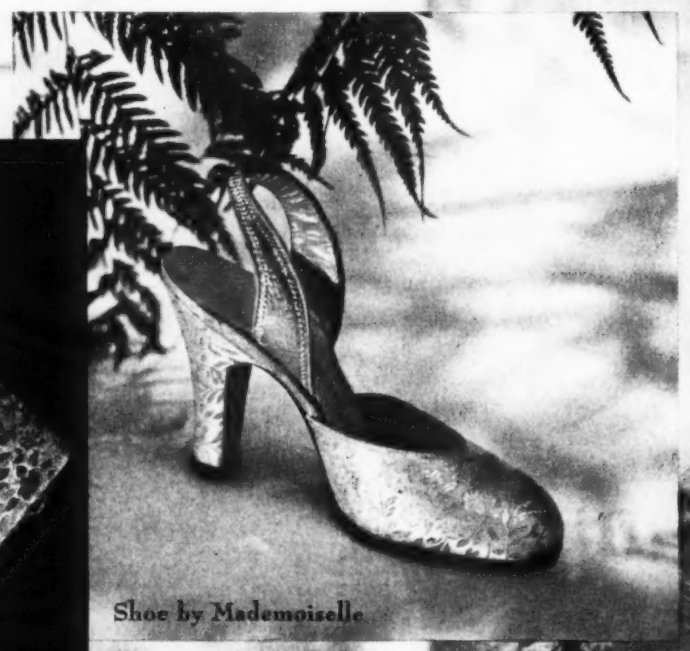
All accessories in brocade
by G. HIRSCH woven of BEMBERG and viscose
rayon yarns with metallic thread



Fitted French evening bag
and fitted palm purse with
matching compact by Dorset

Cigarette Case by Zell

Her Jewelry: Eisenberg Ice



Shoe by Mademoiselle

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"RICH-SHAN"

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a surface-interest **HONAN WEAVE** that looks fabulously expensive—has real action-taking stamina—can be used for budget-conscious or high fashion designs.

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RICH-SHAN

- *washes like a hanky*
- *vat-dyed*
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TIMES are never tough when you dig deep enough to come up with something like Lankenau's "Rich-Shan" —a rayon **HONAN WEAVE** for both men and women that looks costly... has been treated to stand up in action.

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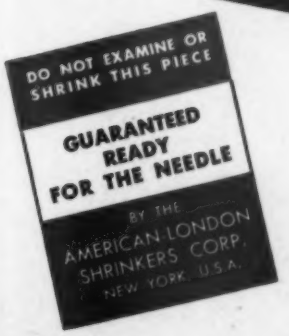
As a retailer: you know that you and your customers are fully protected by American London's seal of approval — a guarantee of complete satisfaction.

Our guarantee never stops short. Our guarantee always delivers what is promised.
Our guarantee goes all the way — the best way — the AMERICAN WAY!



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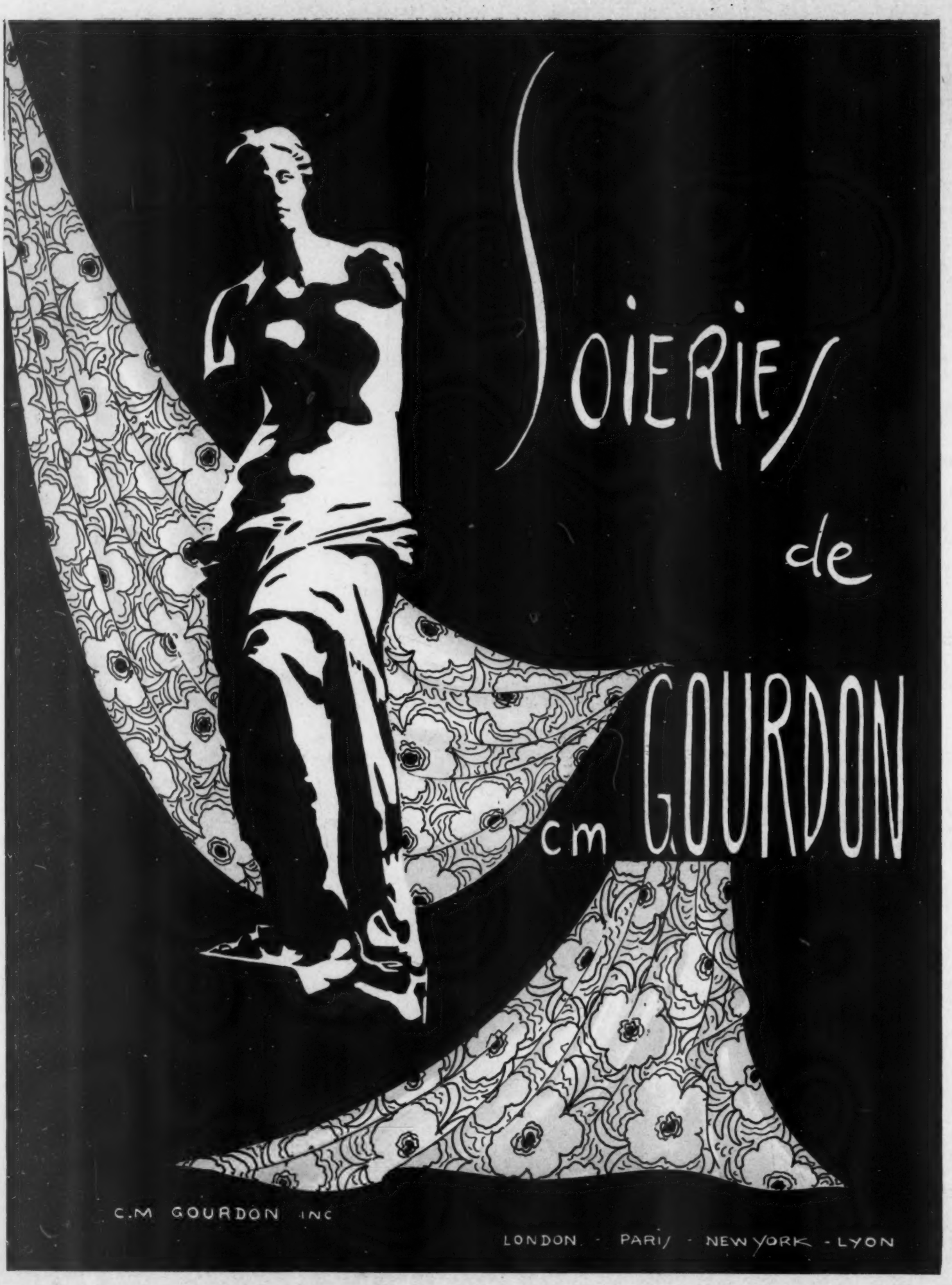
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LONDON - PARIS - NEW YORK - LYON

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100% VIRGIN WOOL

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distinctive version of the *Ribbed Worsted* vogue

designed for the fitted coats of Spring

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because deservedly*

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fashion spotlight

the magic fabric

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The "Everglaze" trade-mark signifies fabric finished and tested according to processes and standards controlled and prescribed by Joseph Bancroft & Sons Co.

*WASHABLE — WRINKLE, SHRINK, STRETCH, SPOT, SOIL AND MILDEW RESISTANT — LASTING CRISP FRESHNESS — DURABILITY OF TEXTURE AND FINISH

LORRAINE® WORSTEDS

Suit by Sam Silberstein

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MARIA MARTEL

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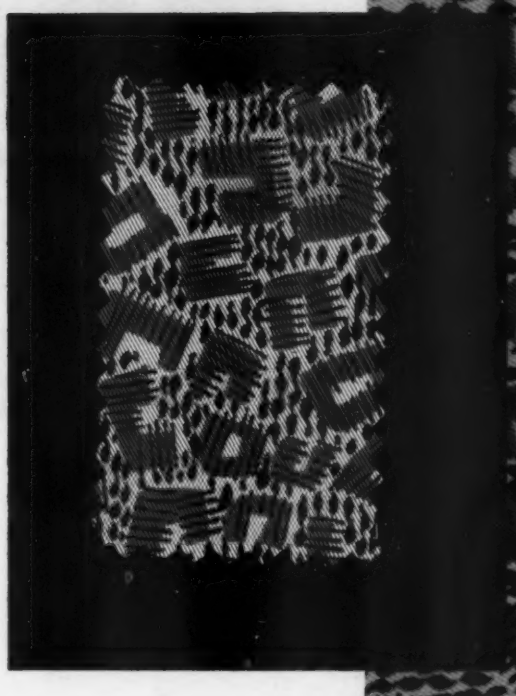

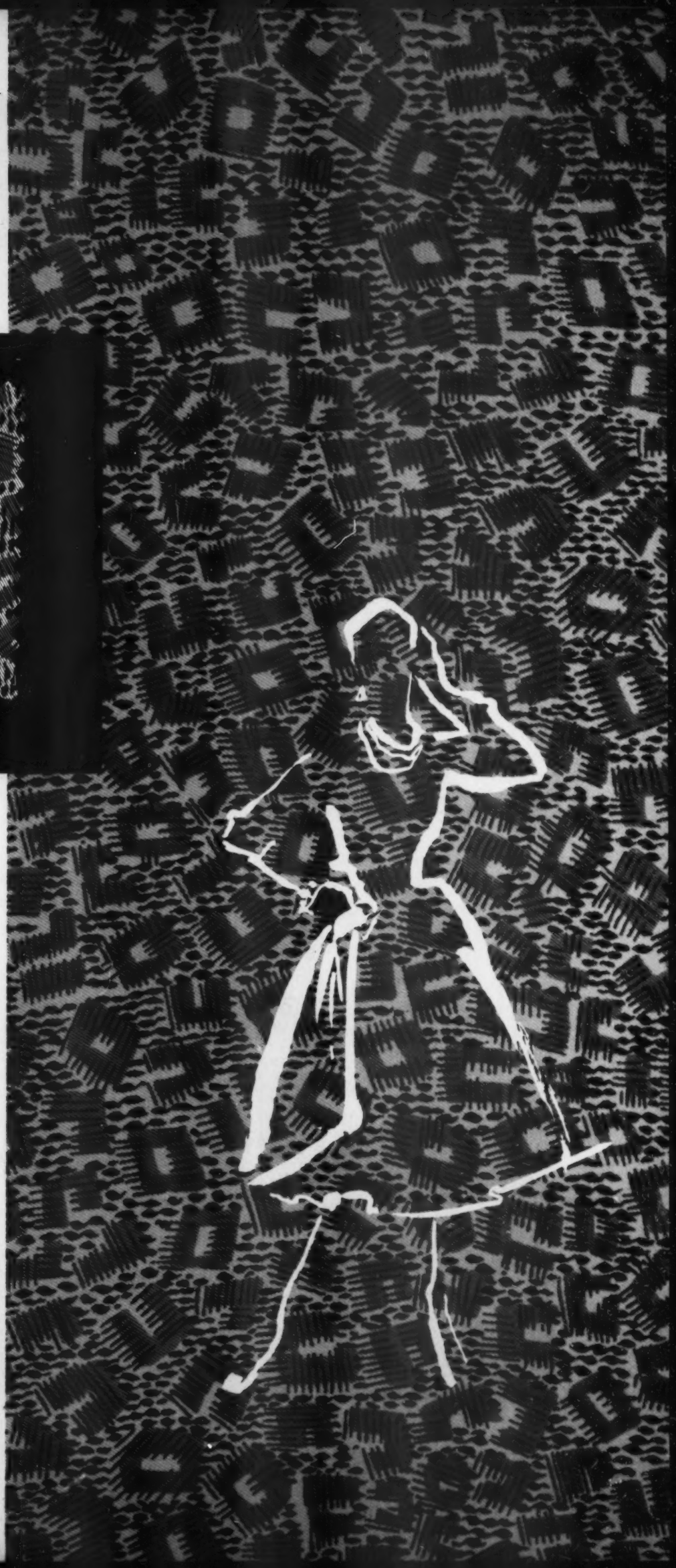

Skinner
SILK

Now comes new testimony to a great skill in the handling of fine fashion fabrics—all silk twill, here presented in a series of distinguished print patterns, to which Skinner is proud to sign its time-honored name.

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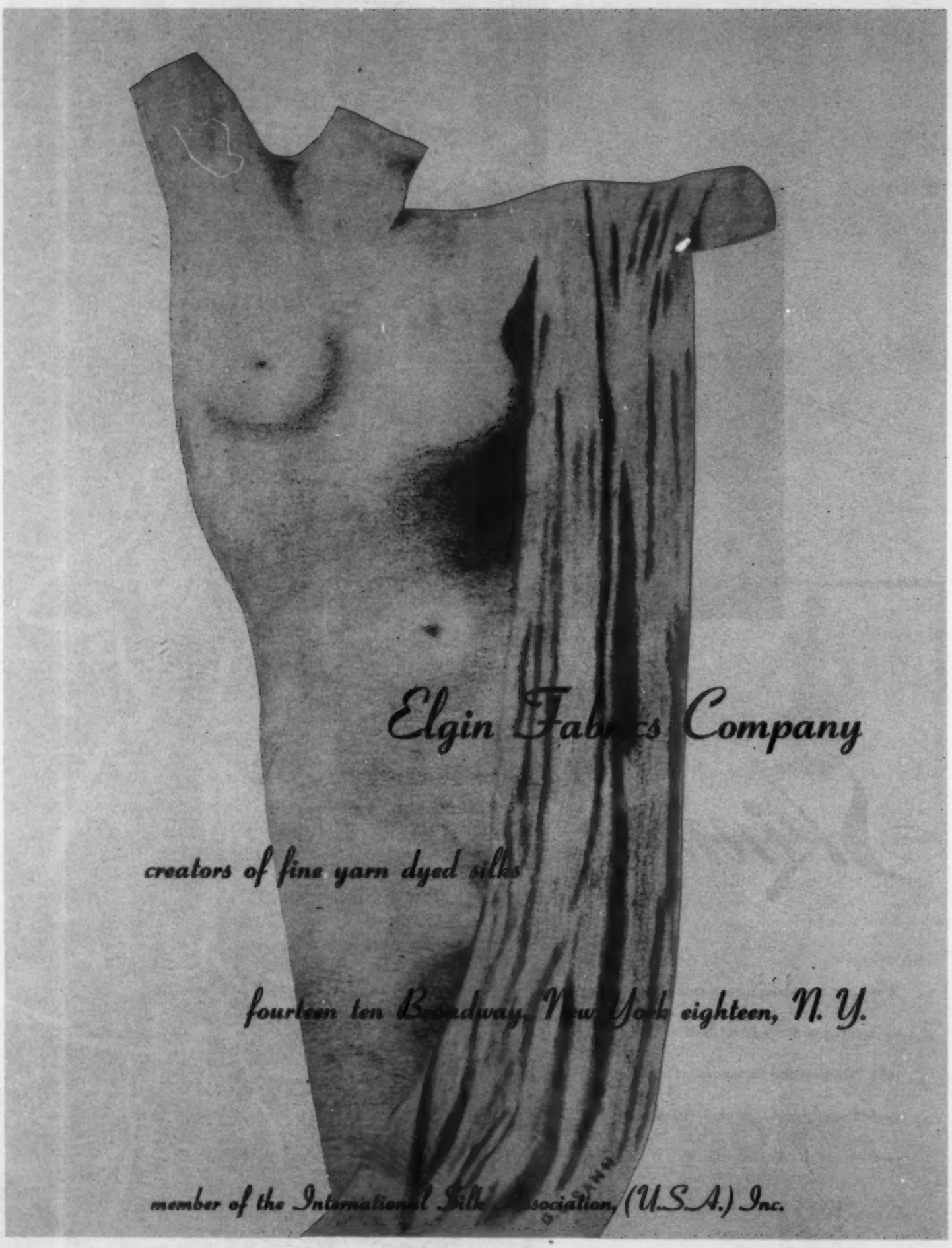

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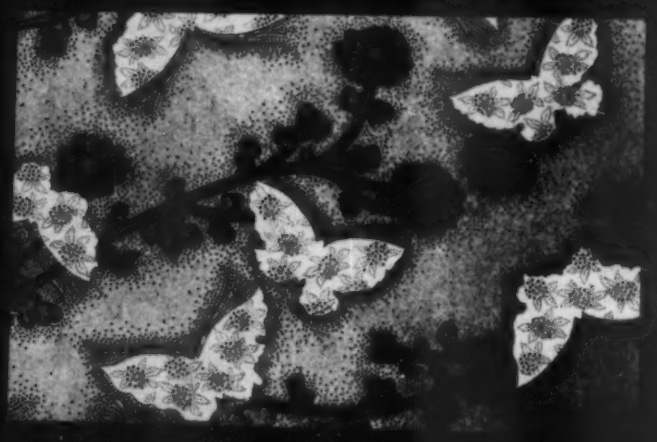

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tram, organzine
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douppioni combinations

specialists to the yarn dyed weaving trade

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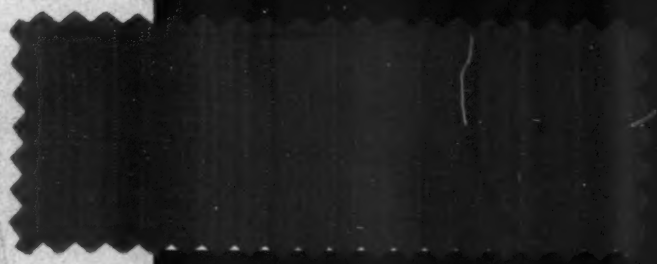
AMERICAN FABRICS presents

Silk in the World of Fashion



A pure silk by GOURDON woven with wild tussah yarn which adds durability to this luxury fabric. Dress by Trigère

余嘗避暑廬山、注時暮館交易之區。吳往有一人識者、而亦無右國可以僑寓。

Richly colored and sophisticated in design is ROBAIX's all silk surrah print

Silk

The renaissance of silk in the world of fashion is a natural phenomenon. *Ever ageless, ever new* . . . silk is an art form as well as an artifact and as such is without rival in the textile world.

The thousand year tradition behind silk has made it a synonym for the finest in fabrics, and for that reason it is always in demand by people who cannot be satisfied with anything but the best. The word *silk* itself has come to have a semantic context which can be best exemplified by those everyday expressions which are standards of comparison in our speech. For example:

We say we feel "fine as silk" . . . our affairs are "smooth as silk," our loved ones have "hair like silk" or "silken complexions." The word *silk* has long been a literary tool of writers and poets which has engraved an impress on our sensibilities that cannot be eradicated.

With the new and growing understanding between that new bulwark of democracy, Japan, and the West, a rebirth of consumer acceptance of this popular textile is showing ever increasing impetus. This has been helped by new methods of weaving and coloring, new means of making silks absolutely colorfast and tubfast, new methods of production which enable end-products of silk to be marketed within reasonable consumer budgets. All of these factors have, in combination, contributed to the ever increasing desirablity of silk as a fashion fabric favorite. *(please turn)*

Opposite: TOKYO HARBOR
Collection Mr. Paul Nipkow

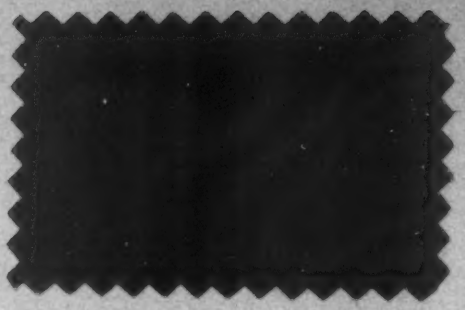
Photo by Breitenbach

As mysterious ....

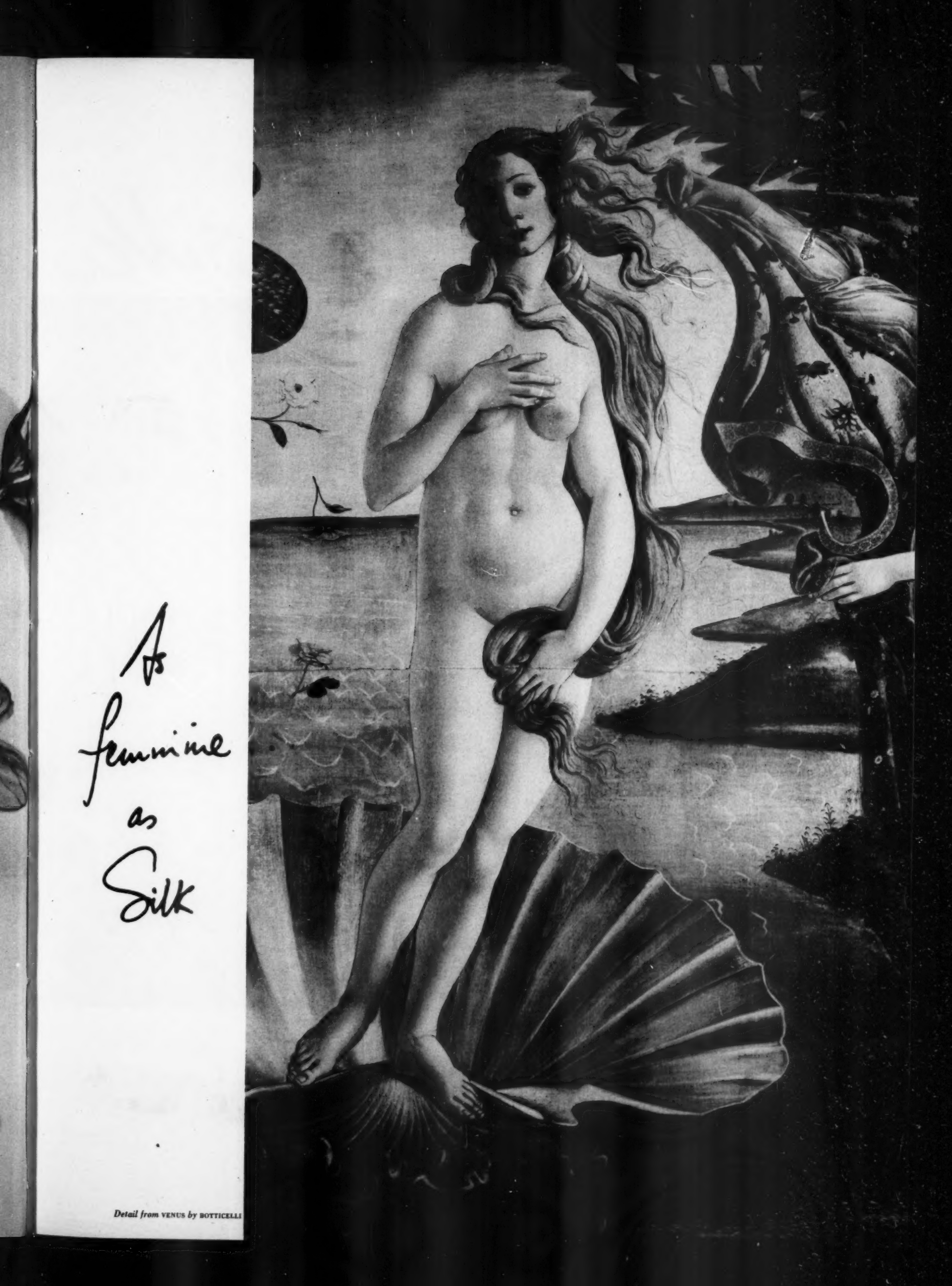
Philip Vogelman designed this all silk surrah print by ONONDAGA for Adele Simpson

as Silk

(please turn the page)



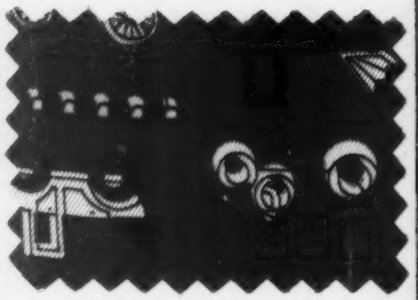
Paper crispness and delicacy of lustre are found in the all silk taffeta of SCHWARZENBACH HUBER. Dress designed by Maria Krum.



As feminine as Silk

Detail from VENUS *by* BOTTICELLI

As silky



A nostalgic small patterned silk surrah print. By AMERICAN SILK MILLS.

The bee motif delightfully interpreted by SKINNER in an all silk print

A new type of silk ribbed suiting. This fabric by AMERICAN SILK MILLS is woven with wool and kid mohair which lend it tailoring quality

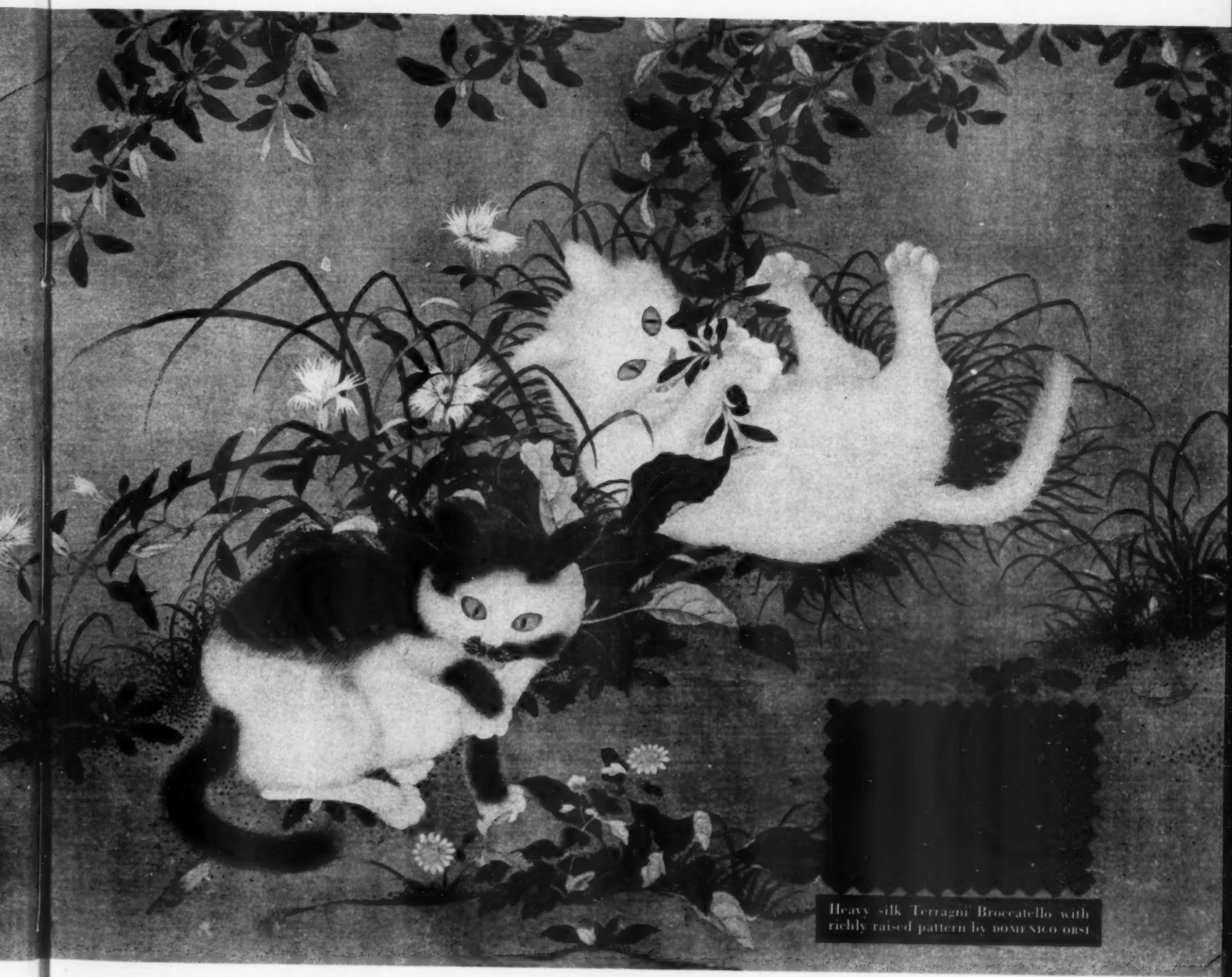
Traditional small checks now have new freshness in this silk broadcloth by SCHWARZENBACH HUBER

Kohala a yarn-dyed taffeta by ELGIN FABRICS. Crisp in hand and iridescent in eye appeal

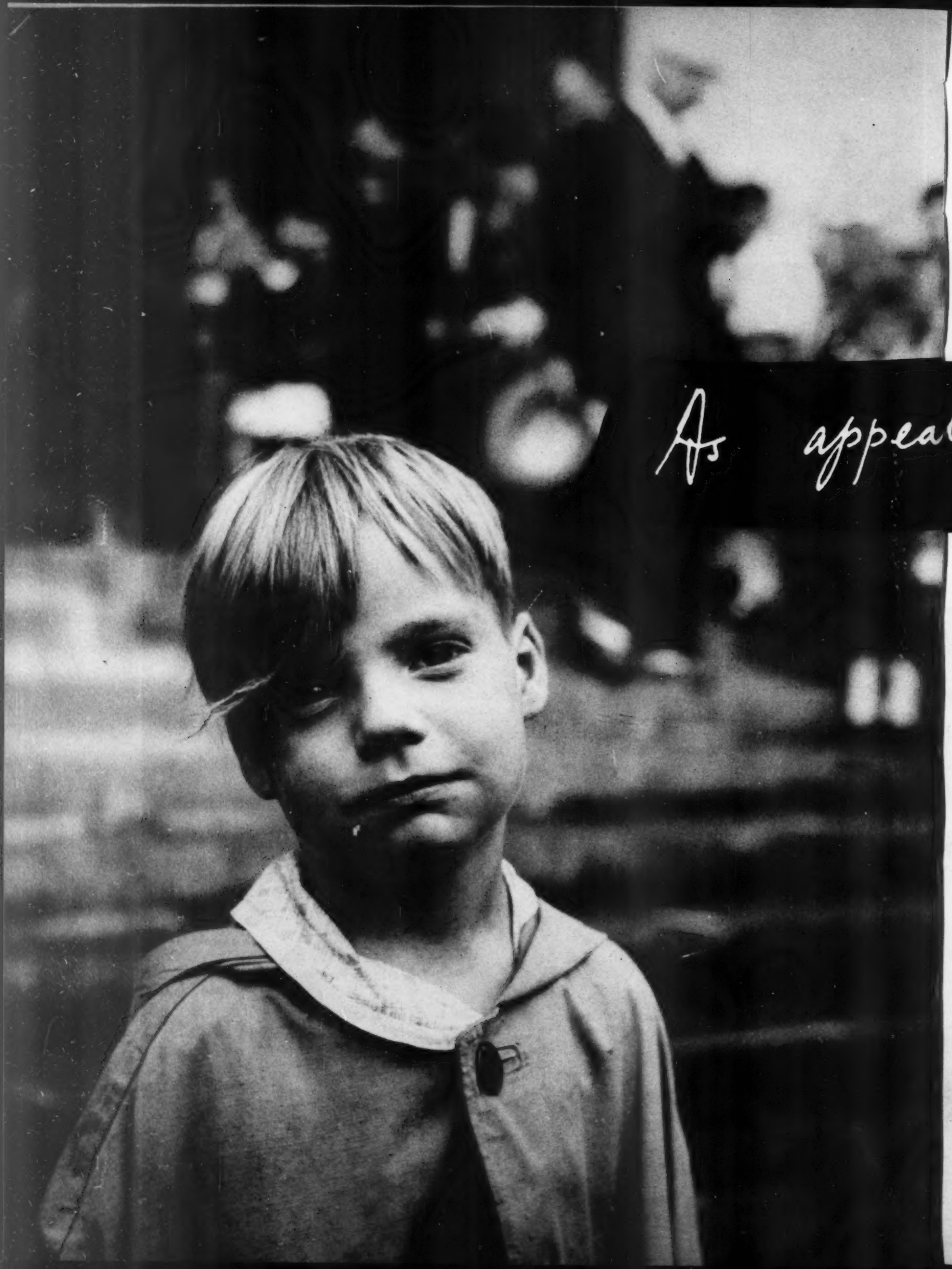
STERN & STERN's silk Sheertung has a crisp permanent hand. Piece dyed for greater color diversification

Detail from* SPRING IN A CHINESE GARDEN. *Courtesy Metropolitan Museum of Art

..... as Silk



Heavy silk Terragni Broccatello with richly raised pattern by DOMENICO ORSI


As appeal

aling as Silk ...

A luxury yarn-dyed silk taffeta by GOODMAN AND THEISE. Dress by Christian Dior.

Silk . . . (continued)

As Cosmopolitan.....

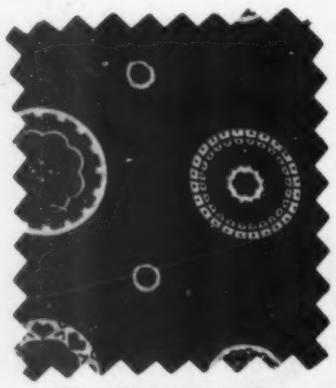
as Silk

This silk pongee suiting with its Gros Grain weave has texture and body. By PONGEES CORPORATION. Suit by Lanvin

A NEW PRINTING PROCESS FOR SILK

A modern perfection of technique, Cohama's Wondersilk, matches the classic perfection of silk to give the consumer a finer product

Washable printed silk
by COHAMA



Washable printed silk
by COHAMA

Last year the American fashion public, always eager for new and beautiful things, took to its heart silk fabrics for dresses and sportswear. Sales of printed silk shirts, for example, rivaled the silk shirt splurge in the decade that followed World War I. Printed designs of every description moved from dealers' shelves almost as fast as they were stocked . . . but the returns on them also proved to be terrific.

The consumer, not having facilities or desire for home laundering, had found that the washing factor in silks was unfavorable. Some of the designs had proved vulnerable to light and perspiration. Vat-dyed colors had lost brilliance or had faded. So of course the shirts were returned.

To overcome these negative factors, the United Merchants set their research laboratories to work on the solution of these problems and others related to them.

The result was a printing process that transformed the situation. By this method of application the colors butt against each other in perfect fit and design. This process avoids the disadvantages found to arise from vat-dyeing and accompanying discharge-dyeing of silk.

Not only is brilliant, sparkling color achieved, but silks thus processed have been able, it is claimed, to stand soap and water tests unqualifiedly, and have proved to be impervious to perspiration. For example, Wondersilk has passed with honor a test by boiling in soap and water at 200° F. and the patterns remained clear and colors as pristine as the original control piece. Repeated tests of this nature showed no deviation.

With these properties added to a collection of finely styled ideas with strong promotional possibilities, Wondersilk may well be a vital factor in the continued popularity of silk as a peerless fashion fabric. Its fine colorings, beautiful hand and extreme durability make it a welcome addition to the select group of fashion fabrics which set trends and ultimately develop volume business based on quality and service.

modern printed fabrics

Chair from Hans Knoll Associates covered in Knoll Stripes designed by Eszter Haraszty. Background of this page shows the stripes in actual size of one of the color combinations.

At right is a partial showing of the Knoll Associates fabrics representing an international group of designers.

MODERN PRINTED FABRICS

A discussion of the growth of modern furnishing fabrics

. . . a small but vital segment of the fabric industry.

by Alvin Lustig

DURING THE PERIOD immediately following World War II, there began a unique chapter in the American fabric industry. In an industry that has always been geared to volume output and committed to designs that satisfied the largest possible number of buyers, there began to be signs of another idea in fabric production. This idea attracted little or no attention from the large producers, with one or two notable exceptions, and even today when it has grown to respectable proportions its portent is not widely recognized or understood.

As is often the case with the growth of a new concept, it develops to fill a need either unrecognized or ignored. In this case the need was adequate printed and woven fabrics to satisfy the drapery and upholstery requirements of a small but growing group of modern designers and architects. Before World War II the modern movement in architecture and design, although it was already over fifty years old, was still considered something strange and remote and certainly very far from anything that could be considered seriously by a volume-conscious industry. There had been sporadic efforts during the pre-war years occasionally to produce a so-called *modern* design, usually influenced by early Viennese, German, Swedish or French efforts, but it can be safely said that there were no well designed modern fabrics available in any quantity or at reasonable prices that satisfied the rather demanding needs of the new designers. This could be said of almost everything in the modern furnishing line; there was no modern furniture available at that time either.

The war seemed to bring release to modern design. Ideas that had existed for years were eagerly grasped by young people everywhere, making the last five years an unprecedented period in the development of design in America. Most of the large producers of drapery and upholstery fabrics had little understanding, and quite often little sympathy, for the principles inherent in modern design. Added to this, they were usually unable to visualize any potential market for such fabrics and generally left the development of this new field to small and usually inexperienced firms and individuals.

There is no set pattern to the early beginnings except that usually they were modest, and were initiated by people outside of the fabric industry, such as architects or their wives, furniture designers, interior designers, graphic designers and sometimes painters or sculptors. They all understood the principles of modern design in one or more fields and sought to achieve the same results in fabrics.

Perhaps the most important single event shaping the direction of modern American fabric design, outside of European influences, was the Organic Design Exhibition organized by the Museum of Modern Art just ten years ago. This was an international contest in furniture, lamps and fabric design, with plans for the manufacture in quantity of the winning entries. The vitality and validity of this effort are demonstrated by the fact that several of the best pieces of modern furniture available today trace their direct outgrowth to this exhibition and contest. This is also true of the fabrics. Some of the prize-winning designs remain virtually unchanged today and are still being produced.

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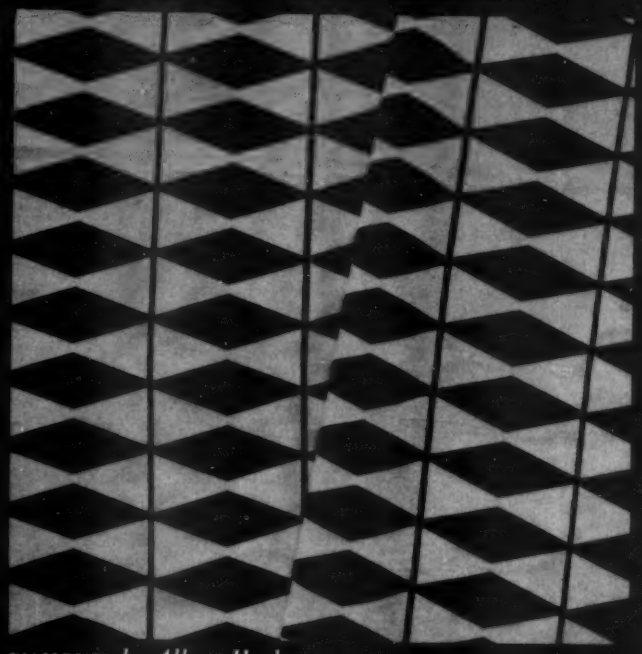
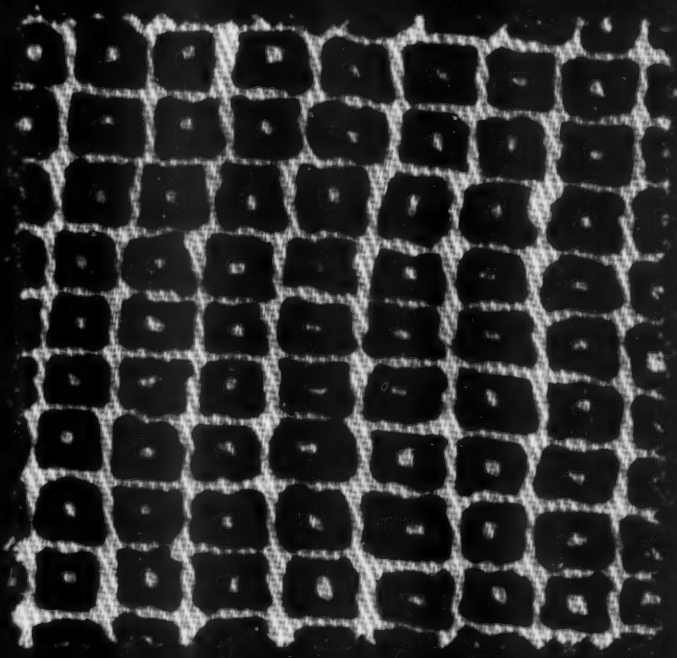
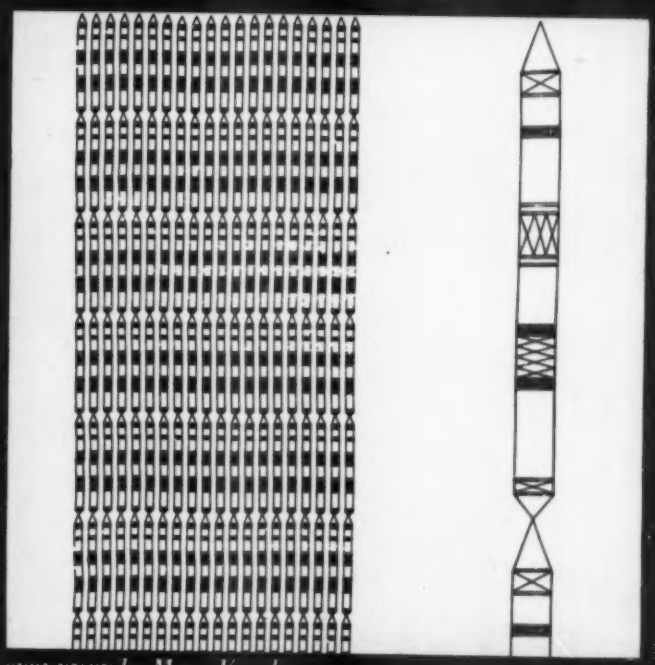


DIAMONDS *by Albert Herbert*

CINDERS *by Eszter Haraszty*



CHINESE COINS *by Naomi Raymond*



SEQUENCE *by Mme. Vezelay*

CAMPAGNA *by Angelo Testa*

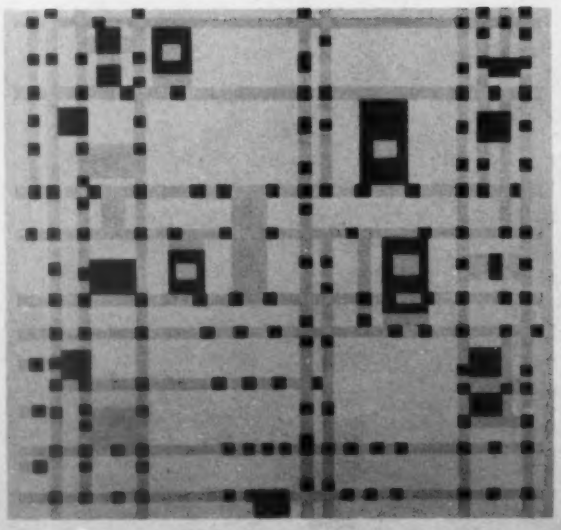
SHOOTING STARS *by Marianne Strengell*

Sources

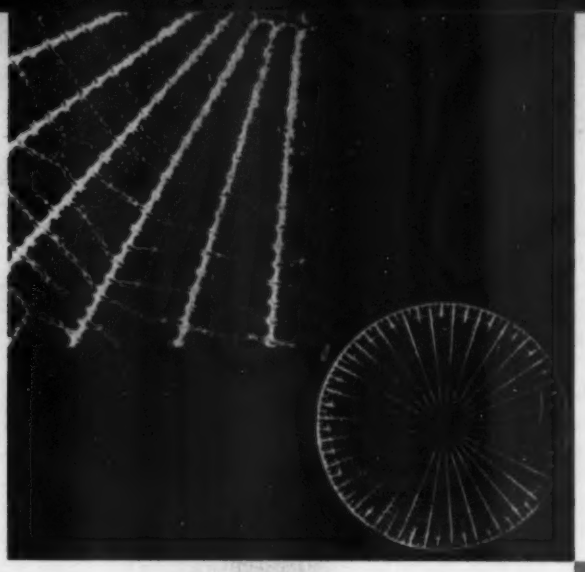
The modern fabric designer has drawn from many areas in his search for form. Primitive art, modern technology, nature, modern painting and sculpture have all helped to shape his ideas.

LADY APART. *A brush and ink drawing by Paul Klee, which combines psychological overtones with subtly primitive form.*

Interior of the famous Tugendhat House in Brno, Czechoslovakia, designed in 1930 by architect Mies van der Rohe. This demonstrates dramatically the architectural use of drapery for covering the glass walls.

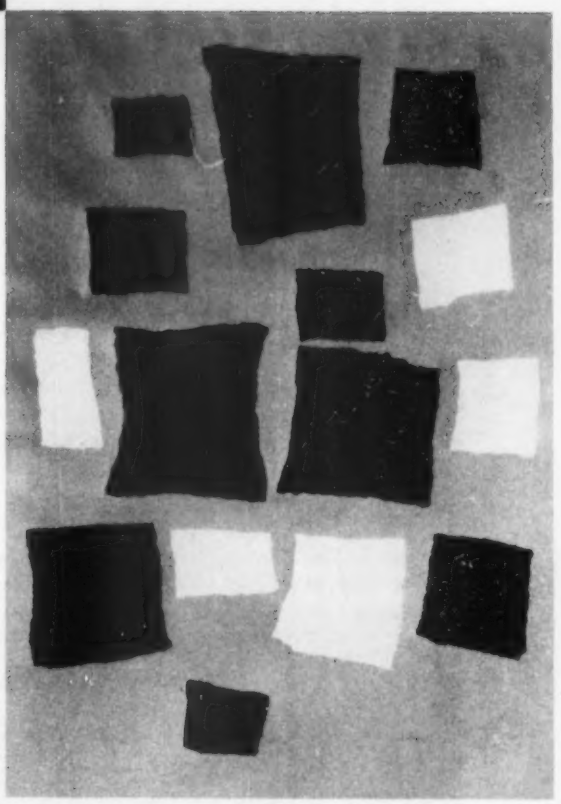


Characteristic geometric precision reflected in BROADWAY BOOGIE WOOGIE, *an oil painting by Piet Mondrian.*

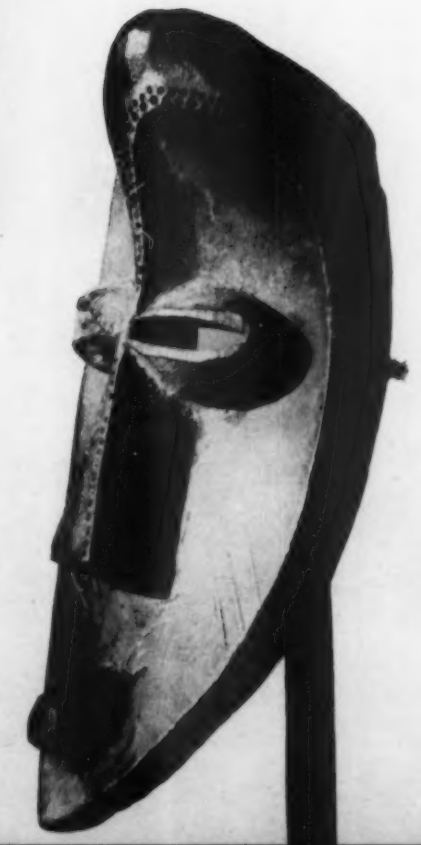


A microphotograph of a diatom. The new worlds of structure revealed by modern technology have provided a vital stimulus to modern designers.

THE BEAUTIFUL BIRD REVEALING THE UNKNOWN TO A PAIR OF LOVERS, *a gouache by Joan Miro. Miro's playful and witty fantasy has had a marked effect in freeing modern design.*



SQUARES ARRANGED ACCORDING TO THE LAW OF CHANCE. *A collage of pasted colored paper by Jean Arp.*



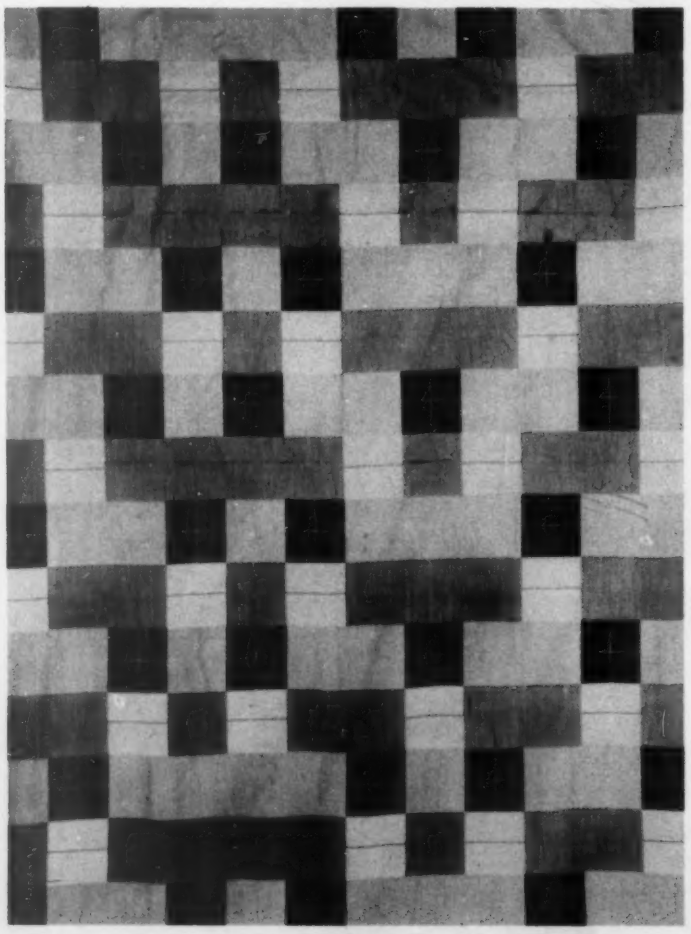
AFRICAN WOODEN MASK. *Modern design has been greatly influenced by the rediscovery of the vitality of primitive forms.*

Photographs on this and the opposite page are by courtesy of the Museum of Modern Art. All of the art objects illustrated are from the Museum's permanent collection.

A very important attitude differentiated the early modern fabric producers from the larger concerns. Designs were never planned for specific or seasonal markets. They were always planned to satisfy some specific need in modern interior design and some have done this so well that they continue to sell five years after their first introduction. The best modern fabrics, like the best modern furniture, have never been planned to satisfy a preconceived notion of *what the public wants*, but rather to satisfy personal ideas of validity in relation to the whole growth of modern design. Another idea common to the pioneers was the use of fabrics usually thought of only as cheap or utility fabrics. Turning away from the lush and expensive brocades, satins and silks so beloved by the traditional interior decorator and so well supplied by the large fabric producers, the modern designers explored, discovered and exploited kinds of modest utility and industrial cloths never before thought of as appropriate for interior design use. These modest fabrics as a background for printed designs gave an air of freshness of color and design that could not be achieved with the more traditional materials.

An extremely potent factor in this entire development was the perfection of silk-screen printing on fabrics. It was possible with a very small outlay of capital to be in the fabric printing business. And because the investment in a new screen was so small, it was possible to produce designs that would probably interest only a small segment of the public. Even though the investment in screen-printing equipment was small, a surprising number of the producers made no effort to own their own equipment but shared commonly printers that were set up for their type of operation. None of the concerns keep any large stock on hand as most of them are prepared to provide special colors.

Below is an example of early experimentation in fabric design that is still fresh and exciting today. This tapestry in red and yellow raw silk was made in 1927 by Anni Albers in the Bauhaus workshop in Germany.



Unorthodox Merchandising Methods

In all of the modern furnishing business, the merchandising methods have often been as unique and unorthodox as the designs themselves. Most modern furniture and fabrics have been sold to the architects and designers and they in turn have sold these to their clients. Not until quite recently was it possible for the general public to go into a department store and purchase good modern furniture and fabrics. At first glance this technique would seem to provide an almost microscopic market, but the astonishing fact is the growth of this market in the last few years. Aside from the educational and propagandizing efforts of the designers, a series of new publications and the development nationally of small shops specializing in contemporary furnishings have helped to develop and extend this originally small market. The personalities of the designers of furniture and fabrics were usually given a kind of publicity that was rare in the traditional field. The anonymous design, purchased for a small sum from some *fabric studio*, was not the method of the modern producer. Every design was the work of a personality usually with an already established reputation in some area of design. Aside from the emphasis on personality, the remuneration was usually considerably higher than in the traditional field.

What are some of the characteristics distinguishing a modern from a traditional fabric? Perhaps the single largest difference is not the character of the pattern or texture, but the use to which it is put. In a modern interior, drapery fabric is used as a part of the architecture and functions as plane of color or texture rather than as panels to hang on either side of a hole cut in the wall. In modern architecture the windows are organized into more compact and usually larger areas than in traditional architecture. The quantity of fabric used is usually considerably more than in traditional use. Whole walls of soft fabric act as foils for walls of wood or stone and become much more than devices to screen windows. Often one will find drape hanging as a partition and acting as a screen partially to divide one area from another. Such an approach naturally affects the character of the pattern. The better designs keep the pattern small in scale and closely knit in character, so that the unity of the fabric is maintained and its character as a textural wall is not destroyed. The large, insistent patterns of the past obviously would not work for this approach. Sometimes the fabric is conceived more as a wall hanging and then larger patterns will work. Some of the designs by modern painters work best when they are used more as tapestries than as quiet elements of an architectural ensemble.

Sources of Modern Forms

As to the forms themselves that are used in modern fabrics, again one finds an exploration of areas untouched by the traditional approach. Most of the patterns and shapes derive from the same sources that helped to shape modern painting and architecture. The sharp, clean forms of a crisp geometry that characterize modern architecture and some modern paintings, have influenced some designs. Others have their source in the rediscovery of the vitality of primitive art. The irrational and accidental explored by others have had their share of influence. Technology, the electron microscope, aerial photography, the delicate tracery of steel in tension — all of these have had their share in developing patterns. Symbolic and psychological overtones can be traced to the influence of still another group of experimental painters. All of these rich visual rediscoveries of the twentieth century have played their part in developing the patterns of modern fabrics.

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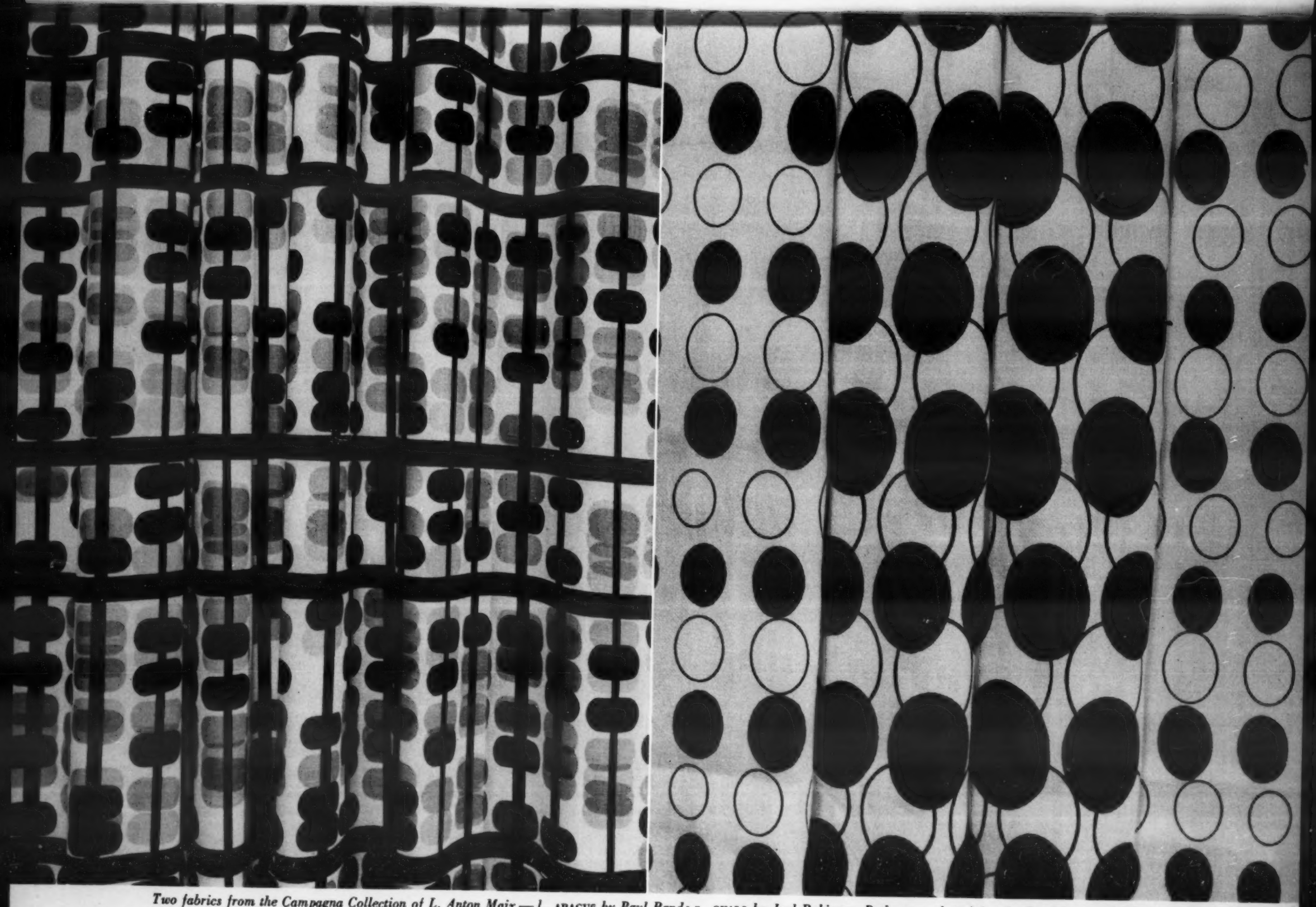


Two fabrics from the Campagna Collection of L. Anton Maix — l., ABACUS *by Paul Rand; r.,* OVALS *by Joel Robinson. Both were selected for the Good Design Exhibition.*

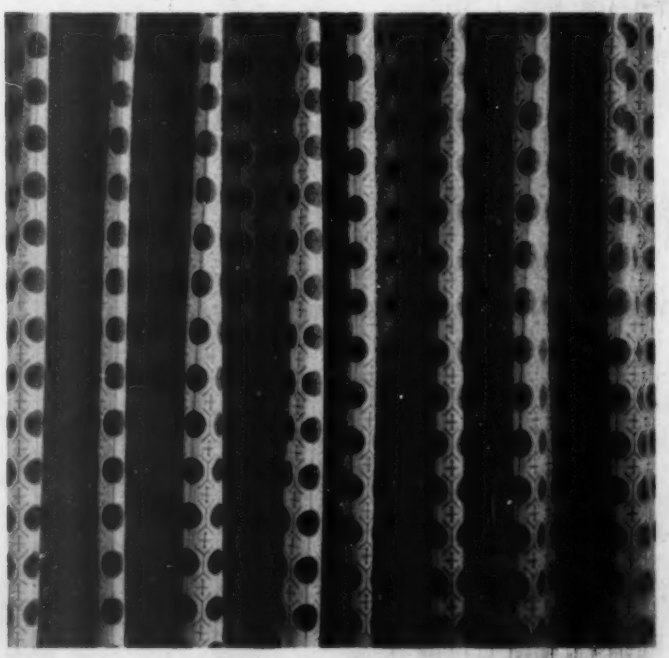
Shown on these pages are the personalities and their designs that make up the Stimulus Fabric Collection

One of the curious facts about the entire modern furnishing industry is the lack of strict boundaries among the various fields. This fluidity is reflected not only by the designers in their versatility, but by the producers as well. The modern fabric makers are no exception. It would probably be difficult to find any single common point in their backgrounds except their enthusiasm. Many designers have become producers and returned again to the role of designer, chiefly for economic reasons. Usually the designer finds it simpler to leave the tasks of production, shipping and finances to hardier souls. One outstanding exception has been Ben Rose, who pioneered in the quantity production of modern printed fabrics in America. Starting out modestly in Chicago, he has built up an imposing line of fabrics of his own designs. His is one of the few operations based upon the work of a single designer.

The more usual approach has been to build up a collection by various personalities with *names* in the field or in closely related areas. Perhaps the most outstanding *name* collection is Stimulus Fabrics produced by Schiffer Prints. Milton Schiffer, their producer, found himself at the close of the war with neither the labor, materials nor market for the needle points he had been producing. He approached architects, designers and even painters like Dali and asked them to produce designs for him. There was not a professional fabric designer in the group, but nevertheless a distinguished collection was established. An interesting sidelight on the influence of modern furnishing fabrics is that several of these designs are moving into women's sportswear and dress fabrics. Dorothy Cox is using a design by Ed Wormly for blouses and skirts for J. R. McMullen Co. and Jean Mersel is designing for Ciro Sportswear, using fabrics of Dali, Rudofsky, George Nelson and Abel Sorenson. L. Anton Maix has extended the idea of the *name* collection with his Campagna group which is formed by a group of artists from all parts of the country, adding the emphasis of the regional to that of personality. Maix is not a designer, but has been active in merchandising and promoting good modern design for many years. Like the other producers, he has sought far afield from the usual fabric designers and has used engineers like Durelli, and advertising artists like Paul Rand in his efforts to develop freshness.

. . . continued on page 72

PAVEMENT *by George Nelson*



RAY EAMES *is a painter and sculptor as well as a co-worker of her husband, who is an architect and designer of the famous Eames chair.*

BERNARD RUDOFSKY, *eminent architect and designer of women's clothes and sandals when he is not writing on these and related subjects.*

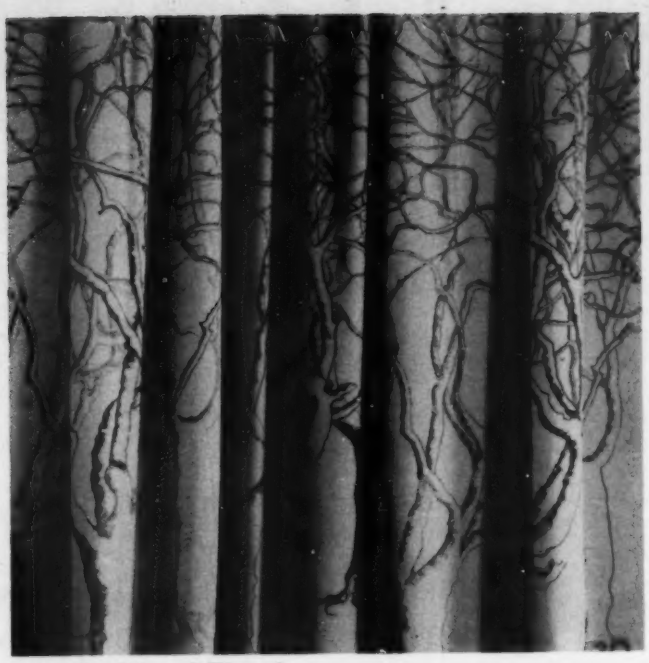
EDWARD WORMLEY *has pioneered in modern furniture design and has probably produced more designs than any American designer.*

SALVADOR DALI, *internationally known for his painting, enters the field of fabric design for the first time with the fabrics of this group.*

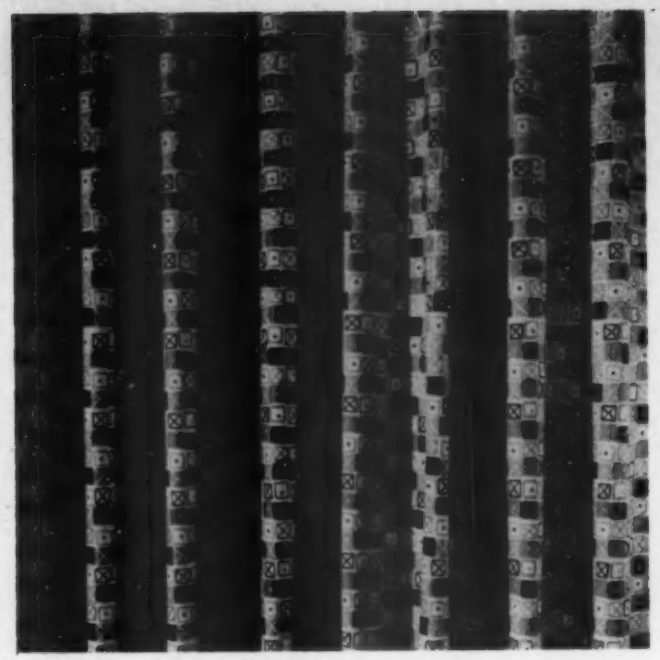
GEORGE NELSON *is a versatile designer in many fields which include architecture, industrial design and furniture, as well as that of fabrics.*

ABEL SORENSON *is the chief designer of the staff that planned the interiors of the various United Nations Buildings in New York.*

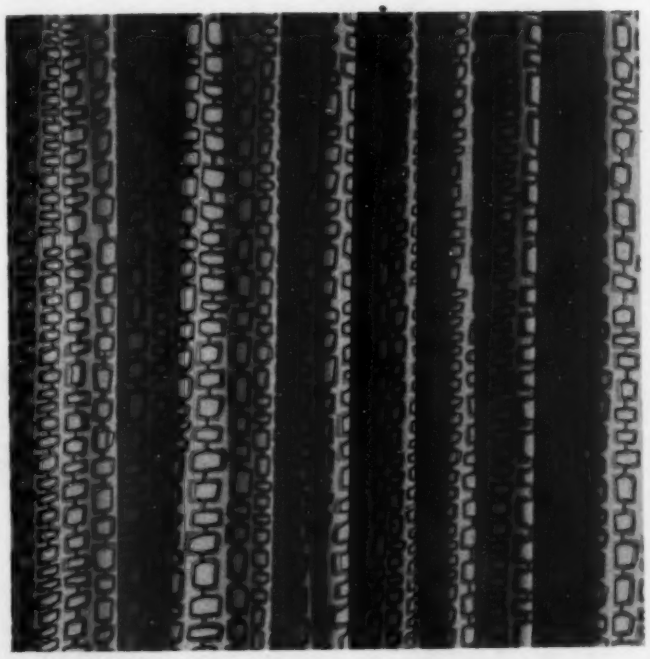
PAUL MC COBB, *primarily a furniture designer, has helped to make good modern furniture generally available in the lower price ranges.*



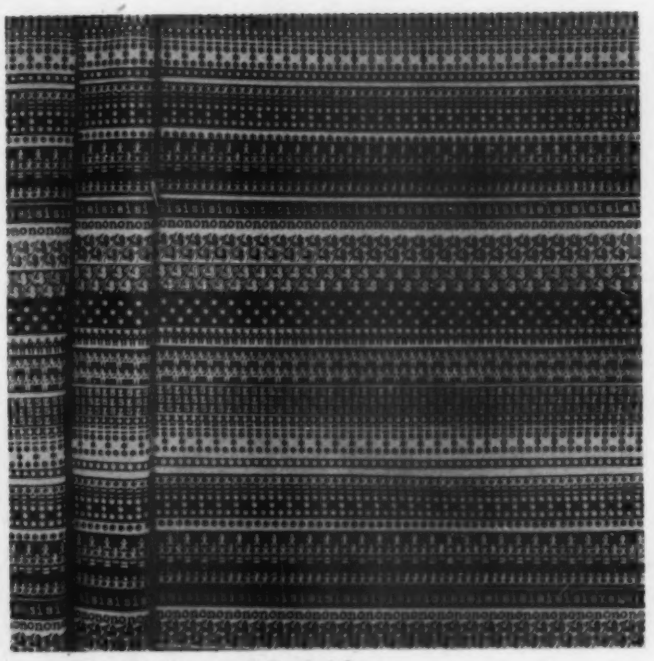
TREES *by Edward Wormley*



CROSSPATCH *by Ray Eames*

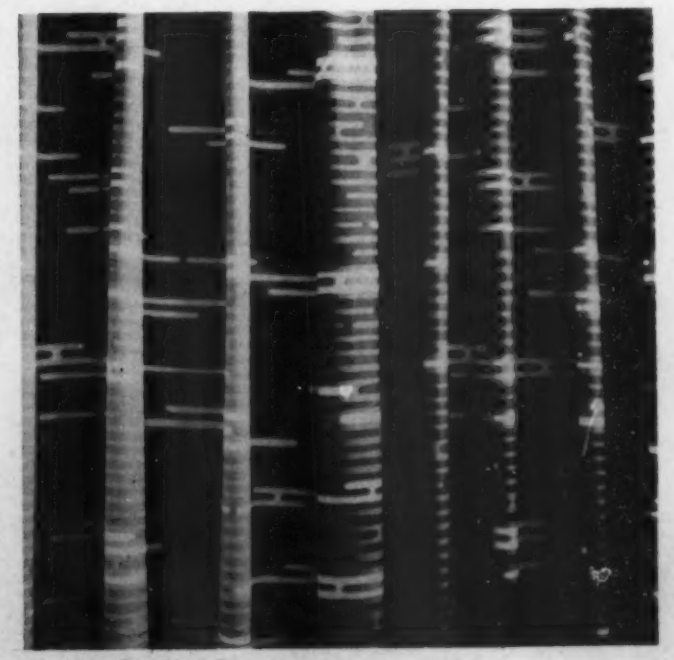


CHAIN *by Paul McCobb*



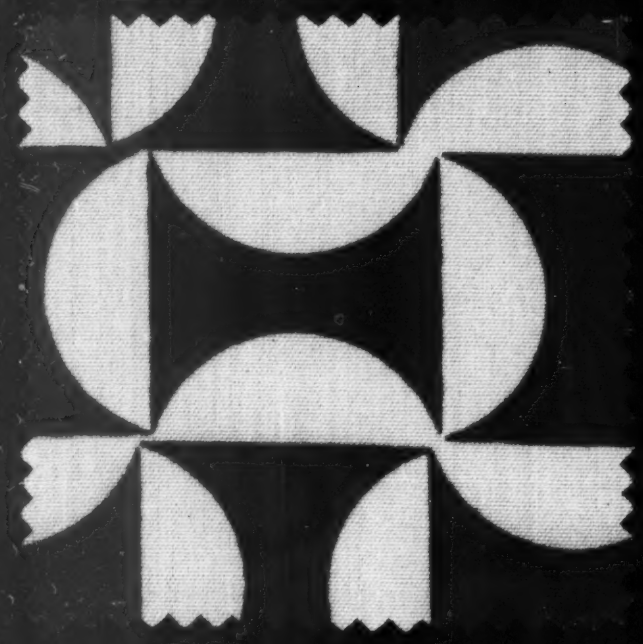
SI AND NO *by Bernard Rudofsky*

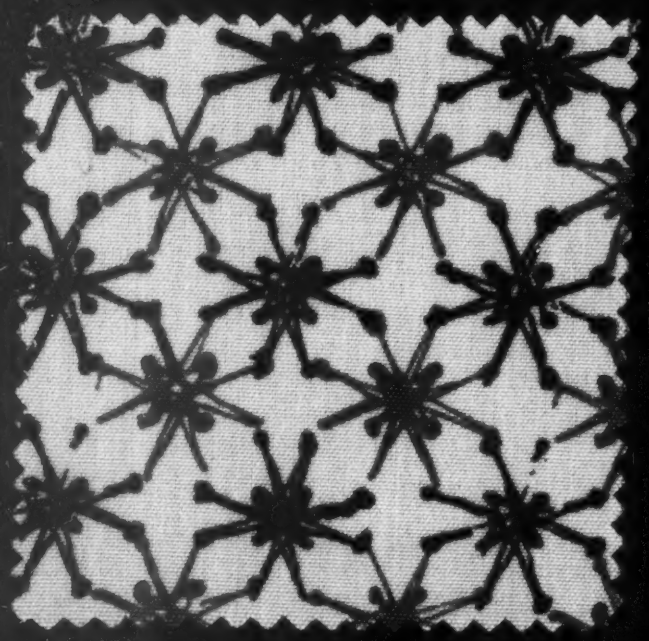
SONATA D'ETE *by Salvador Dali*



DETOUR *by Abel Sorenson*

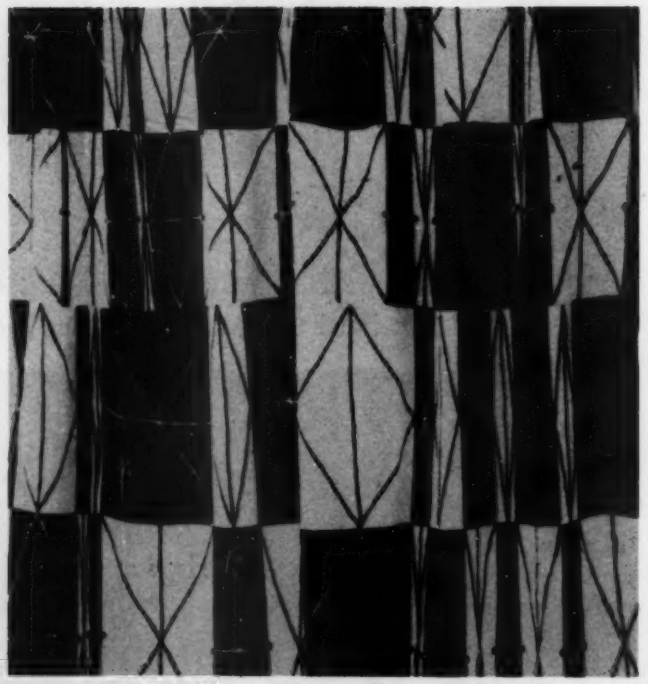
EFFECTIONS *by Juliet and Gyorgy Kepes*



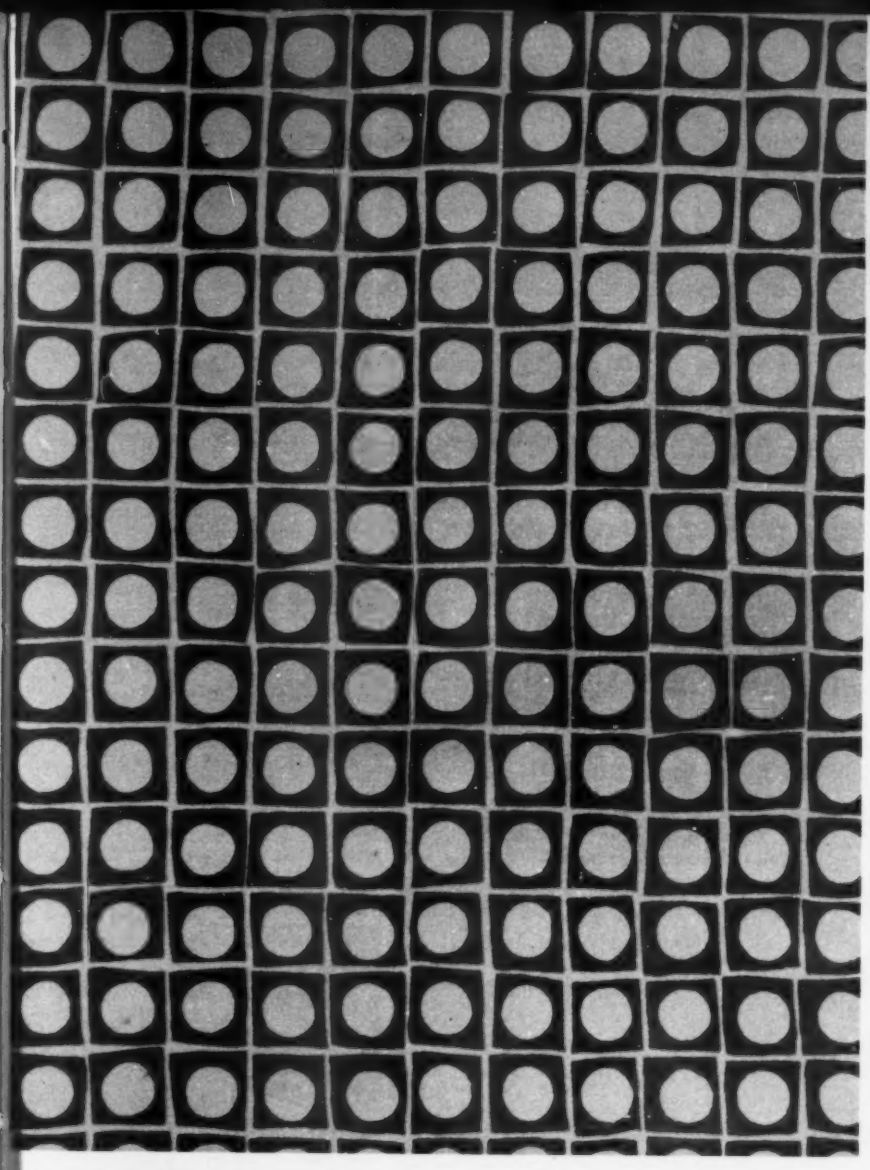


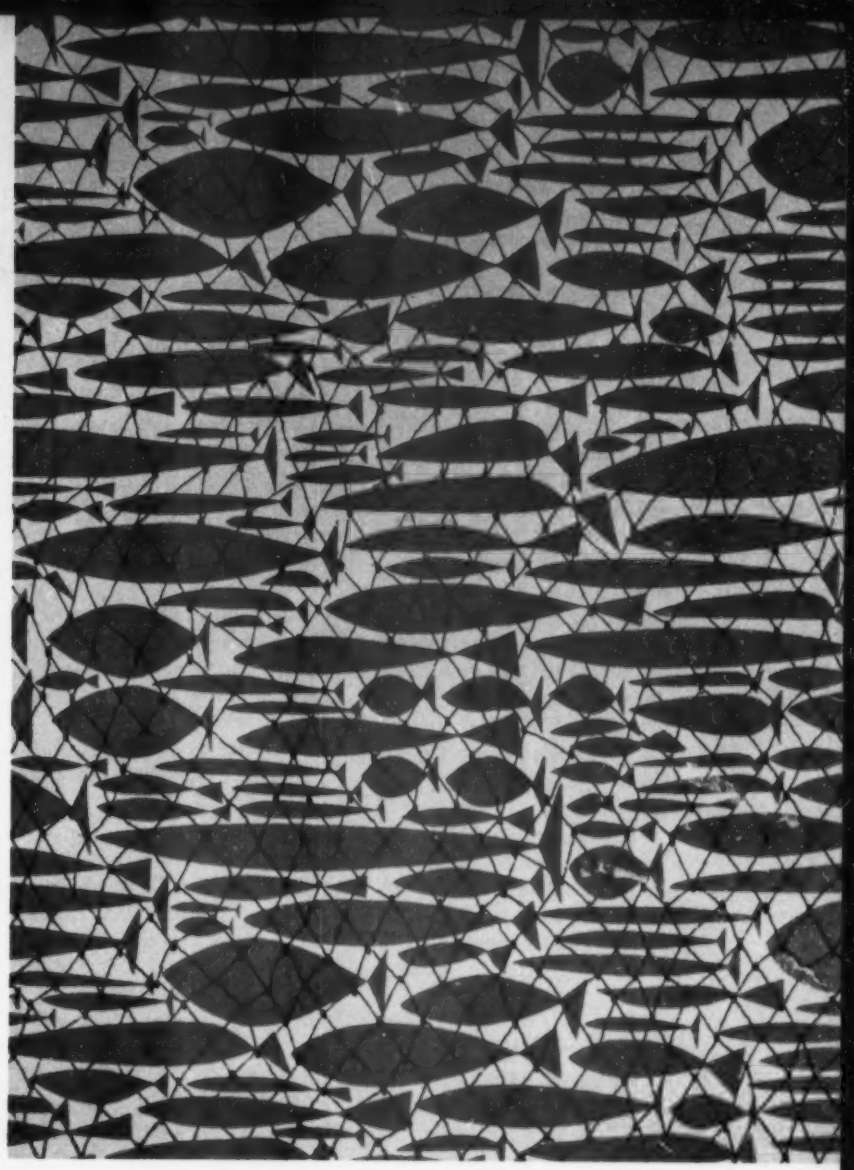
DAY STAR *by Ross Littell*

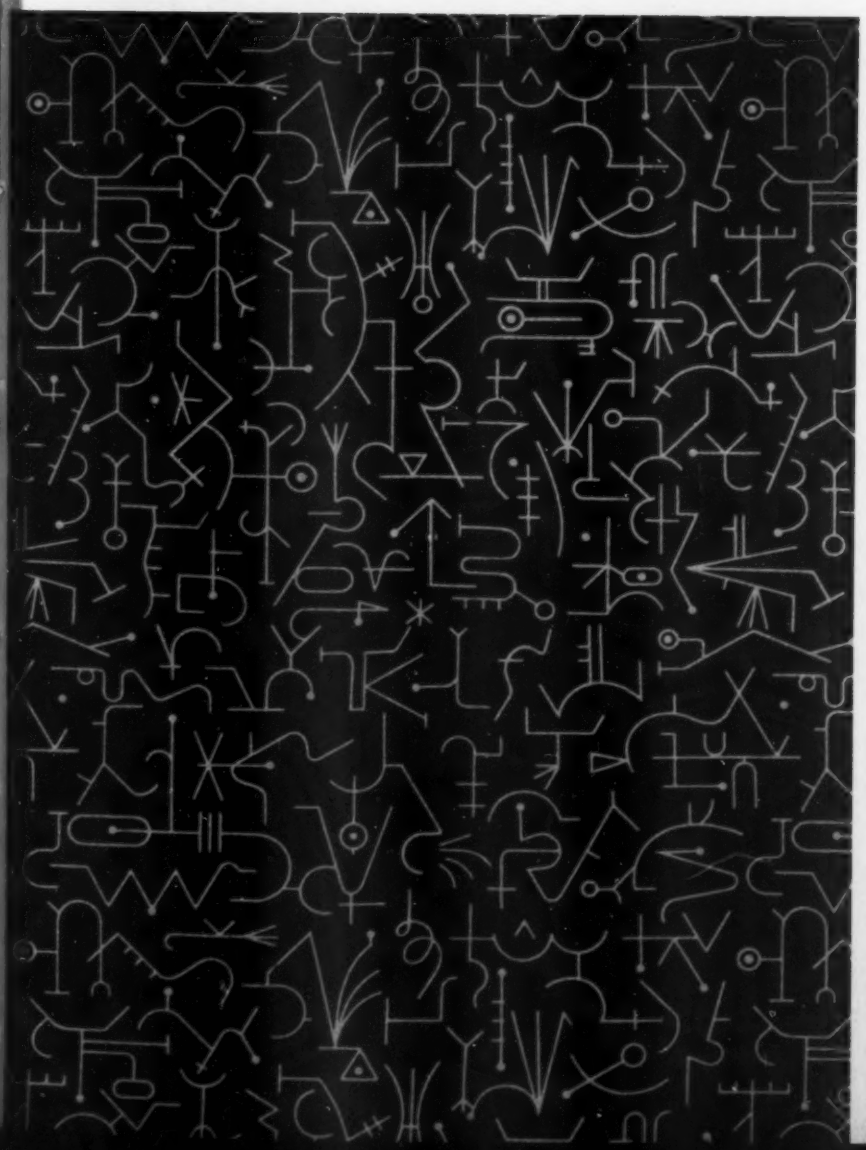
On this and the opposite page are some outstanding fabric designs from Laverne Originals. Opposite page: Upper left, SQUARED CIRCLE. ***Upper right,*** THE BIG CATCH ***by Ray Komai. Lower left,*** INCANTATION ***by Alvin Lustig. Right, a bold design by Alexander Calder.***

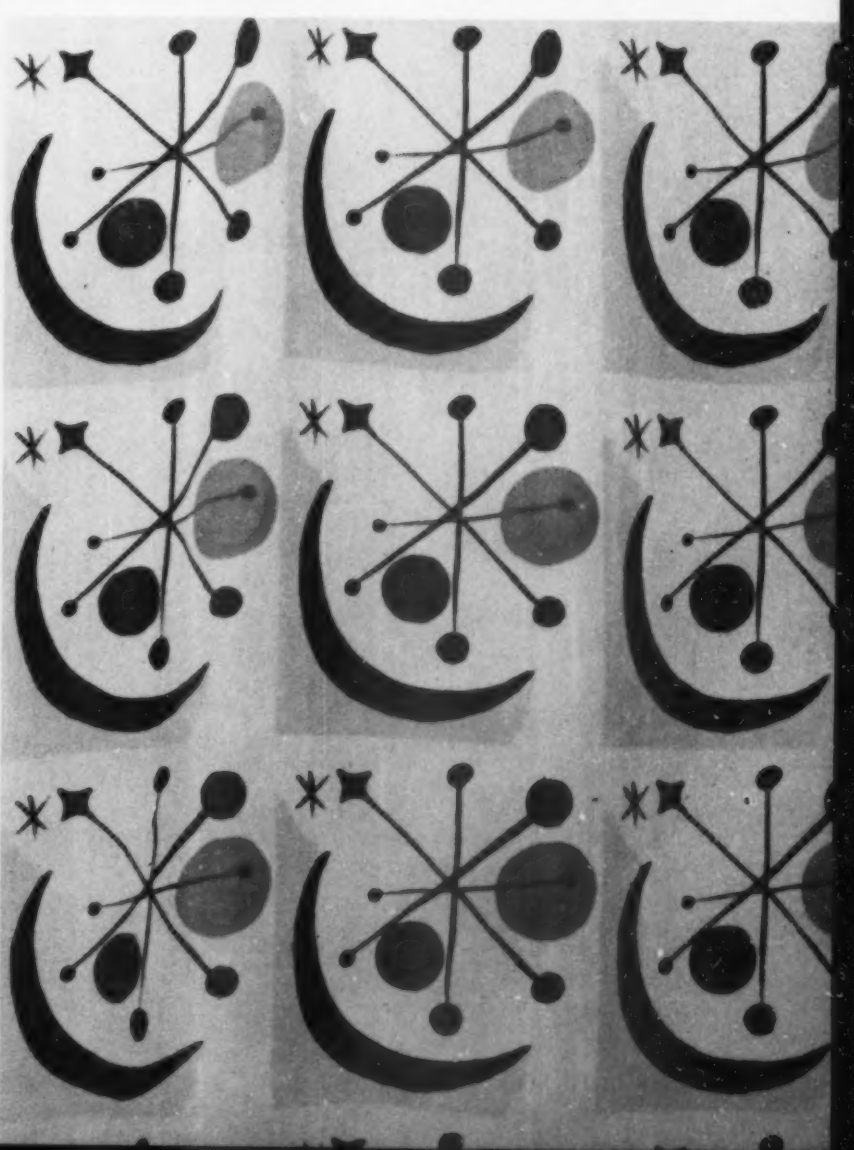


HOLIDAY ***by Ross Littell***









Modern Fabrics . . . ***concluded***

Arundell Clarke, an Englishman who pioneered in modern interior design years ago, is both a designer and a producer and operates his business in a personal and highly selective manner. He seeks out lesser known but talented people in developing a line that has a distinct and personal character. He has shown great ingenuity in using existing and otherwise ignored industrial fabrics in new and fresh ways. He carries no stock, but functions as a custom shop combining fabrics, designs and colors to the specific needs of the architects or designers.

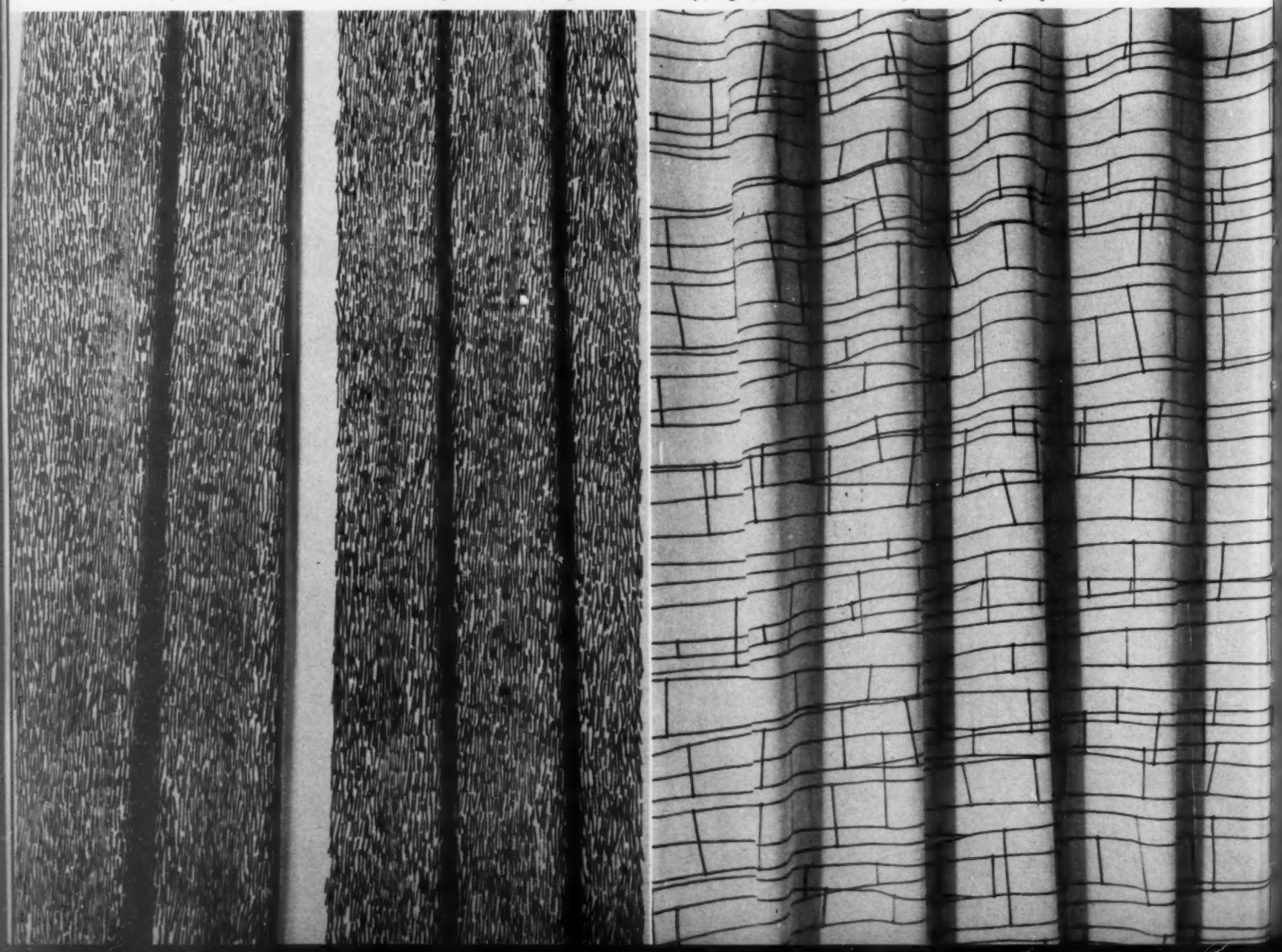
Laverne Originals is the name of a concern built upon the personality of a married couple, Erwine and Estelle Laverne. Originally involved with the production of unique wallpapers, they quickly overlapped in fabrics. Designers themselves, they have placed an emphasis upon creative freedom which they extend to any artists they employ. They have built up a unique collection that combines name value with a wide variety of approach. They also have sought widely for freshness of design and have used such personalities as Alexander Calder, the sculptor of mobiles, and Kepes, the graphic designer. Laverne has also developed several pieces of furniture to which will be added shortly silverware and ceramics, carrying out the concept of integration that is so vital a part of modern design.

With Hans Knoll Associates, the development of fabric design has grown side by side with the development of furniture. Added to this, the Planning Unit, another division of Knoll Associates, has been concerned with the design of complete architectural interiors. This close relationship in the three areas has helped to produce designs of an integrated and meaningful character that would be difficult to obtain under other conditions. Because fabric design is developed in close collaboration with both furniture designers and interior designers, nothing is produced for hypothetical situations, but for conditions existing within a single organization. The fine quality of design of its fabrics and furniture, as well as the impressive financial success of Knoll Associates, are directly traceable to this factor of imaginative integration. The fabric division, like the furniture, draws from an international group of designers, and is under the direction of Eszter Haraszty, a talented Hungarian designer.

In terms of dollar volume all of these activities together probably do not equal the income of one of the older, large production mills. However, no existing producer can show a comparable increase for the last five years, nor can he face the future with the confidence of the newer, smaller fabric makers. Many of these small firms have come close to becoming *big business* in a very short space of time. The entire field of good modern furnishings which has grown up outside of the orthodox production and merchandising methods, has grown into a multi-million-dollar business in the last five years.

Perhaps the lesson to be learned from this entire development is the mobility of the taste of the American people and the unfixed nature of buying acceptance. The kind of courageous, experimental thinking and planning that has gone on despite the advice of the *experts* who know exactly *what the public wants* attests to the vital creative development that is still possible in this country.

Two fabrics from Arundell Clarke — left, RENDERING *by Albert Radoczy; right,* STROOM DRADEN *by Pierre Kleykamp.*



Digging at Huaca Prieta showing the strata of deposits in which fragments of fabrics dating back as far as 2500 B.C. were discovered.

AMERICA'S OLDEST COTTON FABRICS

A report on textiles made in Peru prior to the domestication of the South American Cameloids

By Junius Bird and Joy Mahler

Few people other than specialists in Peruvian archaeology know that as far back as 2500 B.C. cotton fabrics were being made in America. Compared with the textile record of the Old World this is surprising, for the oldest cotton fabric yet discovered there, a tiny fragment preserved by contact with copper in the ruins of Mohenjo Daro in the Indus Valley, is probably no older.

Unfortunately in India, the Old World center for the development of cotton, climatic conditions are not suitable for the preservation of ancient fabrics. For this reason we know virtually nothing about the earliest textile record and the prospect for the ultimate recovery of really ancient specimens is uncertain.

In contrast, the desert conditions of the Peruvian coast have preserved vast quantities of fabrics dating to at least 2500 B.C. Prior to 1946 most of the material collected there came from the cemeteries and very little could be dated before the Third or Fourth centuries B.C. Now, as a result of archaeological field work by the American Museum of Natural History, there are several thousand textiles of the earlier periods which, although by no means as spectacular as the later products, do reveal a great deal about the early development of weaving.

The motive prompting the excavation which produced this material stemmed from a theory on the origin of cultivated cottons in the New World. Proposed by Hutchinson, Silow and Stephens in their book, *The Evolution of Gossypium*, the theory implies that an Asiatic

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cotton was introduced into America as a cultivated plant. Botanical evidence indicates that the oldest focal point for the dispersal of cultivated cottons in America lies in northern Peru and southernmost Ecuador. Genetic factors suggest that a wild lintless American cotton crossed with the introduced species to produce the features which distinguish New World cultivated cottons from Old World species. As this lintless species occurs only in a few coastal valleys in Northern Peru, it seemed that this region might be worth investigating to learn, if possible, when weaving first appeared. Certainly if cotton was introduced as a cultivated plant, it must have been brought specifically for the production of textiles. Accordingly an expedition was organized and a survey made of the oldest community sites. The results were rather surprising and, though they neither prove nor disprove the theory mentioned, they do at least demonstrate that the textile craft of Peru was based primarily on the use of cotton.

Early Cultural Factors

Before discussing the fabrics found one should understand the cultural level of the people who made them. We learned that at about 2500 B.C., or slightly earlier, a group of people totally unlike the earlier inhabitants of the same region occupied locations along the coast in the vicinity of Trujillo that offered the desirable features of land which could be cultivated without irrigation, and protected sections of beach where net fishing was possible. Due to the nature of that coast, such locations are rare, with the result that once the new arrivals were established, they continued to use the same locations for many centuries and vast accumulations of refuse, up to 45 feet in thickness, were deposited. The recently developed method of dating organic remains by measuring the radiation of the Carbon 14 present indicates this accumulation of debris represents continuous occupation until about 1200 B.C. when a new population movement occurred.

On the basis of their material culture these folk were decidedly primitive in some respects. They did not know the art of pottery making, nor did they work any metals. If their stone artifacts were the only criteria for judging them they might be considered almost on a par with the ancient lower paleolithic cultures of southeastern Asia, for they did not utilize any of the more advanced techniques of stone working in preparing their implements; on this score alone their culture is unlike any other yet discovered in America. Apparently they practised a simple agriculture cultivating beans, squash, peppers, gourds, and cotton, for there were more remains of these plants in their middens than one would expect if they were solely wild products. Moreover, none of these plants are found growing wild in the vicinity today and, as there was no evidence of any change in the nature of the local flora, conditions governing plant growth have not altered. This would mean that the local desert conditions were similar to the present and in part explains why delicate perishable material has survived so long in unprotected middens.

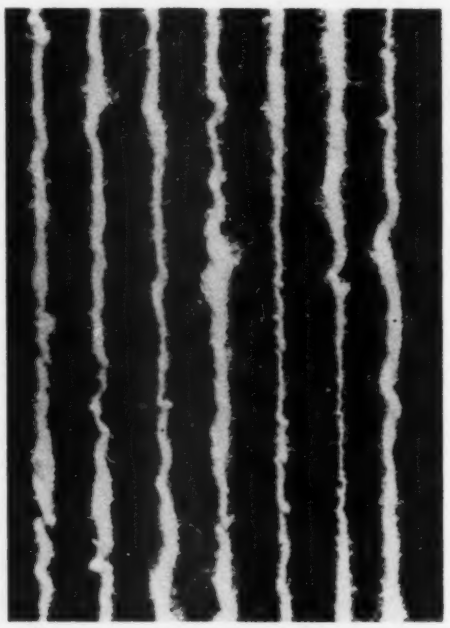
Earliest Peruvian Textiles

In view of the otherwise simple technical development, the presence of textiles was completely unexpected. Actually thousands of textile scraps were recovered by sifting sections of the community dump. Quite naturally the majority were badly worn before being thrown away so complete pieces are quite rare. As found, encrusted with dirt and impregnated with airborne marine salt, they were far from impressive. Even when cleaned they reveal none of the spectacular color and design which one associates with Peruvian fabrics. Obviously the better known pieces represent the culmination of many centuries more of experience and development, while those from the very early period are a stage much nearer the beginning of textile development. Their great value is, then, not as an expression of art, but technically, in that they reveal an early stage in fabric production, offering one of the best opportunities yet found anywhere in the world for an understanding of what may have been a long and well stabilized stage in the evolution of the textile craft.

Technically they differ markedly from the later Peruvian fabrics and are further distinguished by the complete absence of wool, which was so important in the later periods. Here the materials used were confined to cotton and a bast fiber apparently from the stem of a vine locally known as chivo, a member of the milkweed family.

Dyes were undeveloped and quite limited in use. Blue, from a source as yet unidentified, is the only color positively a dye. Red is fairly common and may possibly in a few instances be a dye, but in most was a pigment rubbed on the finished fabrics or on the yarns before weaving. As this brushes off, it is rather fugitive and often so faint as to be scarcely perceptible. The only other colors come from the natural tawny and brown shades of cotton. With such a narrow range, little variation was possible in color contrasts.

Before discussing the structural techniques, we should first consider the yarns used, for yarn, as we all realize, determines to a great extent the nature of the finished fabric. First we might note that there is not a single example of fabric made solely of single strand yarn and that where it is employed it is generally paired with a two-ply in the warp. The standard product was two-ply yarn with three-ply present only in rare instances.



Well preserved single strand spun cotton yarn. This dates from about 1500 B.C., and is typical of the early period.

The cotton yarn as spun is quite uneven in diameter and in nearly all fabrics is spun clockwise and doubled counterclockwise. Those which are spun and doubled opposite to the usual practice are rare, and utilized in a particular manner to secure a desired effect in a finished fabric.

In handling the bast fiber, the direction of spinning is opposite to that for the cotton. The explanation is that this bast has a natural tendency to twist counterclockwise, so it had to be spun in that direction to produce a durable yarn. For some reason we do not understand, they did not make fabrics solely of bast. Its use is curiously limited and we see it either blended with cotton, in which case the spinning direction follows their standard practice for cotton, or more commonly plyed with cotton in which cases the doubling twist is again that used for their standard two-ply cotton. In other words, the doubling twist is in the same direction as the twist of the bast and counter to that of the cotton element. This, to say the least, is an unorthodox procedure, for the elements in any yarn should be doubled in opposite direction to the way they are originally spun.

In utilizing the ½ bast ½ cotton yarns one finds that the general practice was to pair such a yarn with a pure 2-ply cotton yarn, with the result that the maximum amount of bast in any fabric or section of fabric rarely exceeds 25%.

Strangely enough, nothing was found which could be identified positively as a spindle. One can only assume that the spindles used were slender natural twigs which require no shaping or trimming. This is entirely possible, as in the same valley in Peru today women are sometimes seen twisting coarse cotton yarn by using merely a

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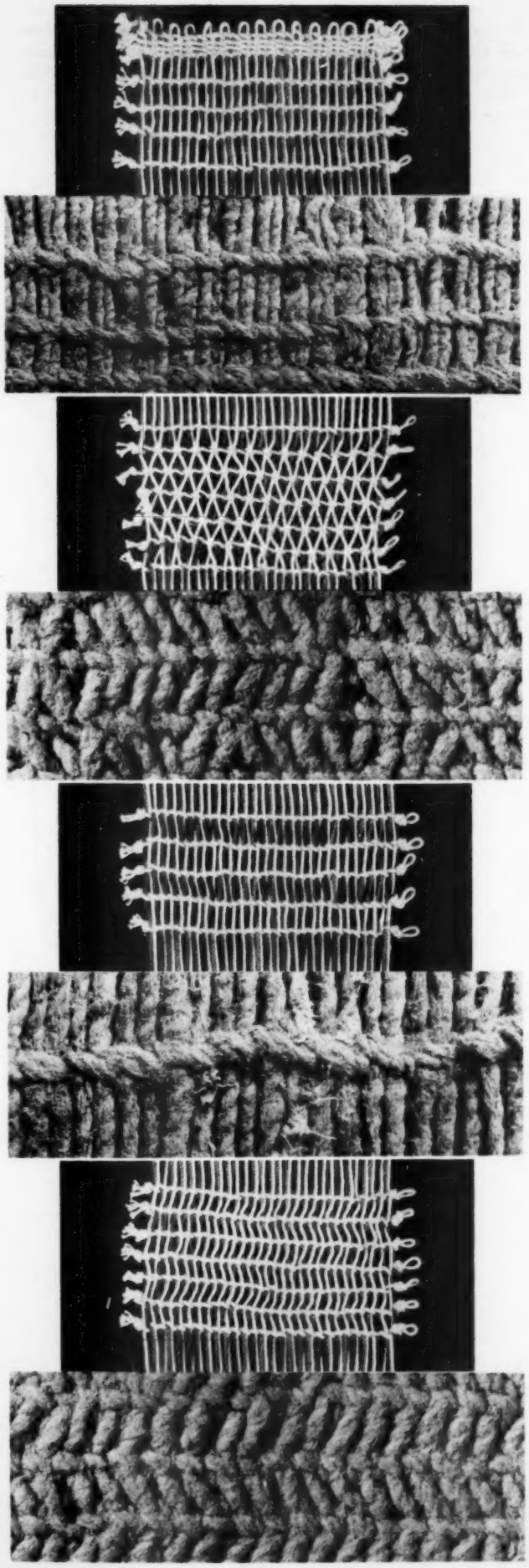
Junius Bird is Associate Curator of South American Archaeology at the American Museum of Natural History and was in charge of the excavations which produced the fabrics described here. Joy Mahler has worked as Research Assistant on the collection.



shoot of a local shrub without any whorl attached. If recovered archaeologically, such a crude implement could never be identified with certainty unless some yarn happened to remain in place. This, unfortunately, was not the case, but on the other hand we can be positive that in this early stage, just as in the modern example, no whorls of any sort were used for they would have been readily recognized. The materials made with this relatively crude yarn fall into the following categories:

	Per Cent
Twining	*78.3*
Looping and loop coiling	*10.1*
Fish nets, knotted	*7.5*
Plain cloth, warp face weave	*3.7*
Plain cloth, warp face with warp floats	*0.2*
Netted pouches	*0.2*
	100.0

(This list does not include matting and basketry.)

These figures are only approximate, for the analysis is still in progress and it is a slow process.

Twining the Prevalent Technique

Twining, the most frequent technique, is a construction in which two weft elements are twisted about the warp yarns. As this twist when firm holds the wefts in position, a durable fabric can be produced with the wefts much more widely spaced than in weaving. Although it is also possible to place twined wefts close together to produce a weft-face fabric like the Chilkat blankets of the Northwest Coast of North America, in this early stage one finds compacting of wefts only for securing warp ends. In the rest of the fabric twined wefts are consistently spaced, leaving most of the warp exposed. Very rarely some color differences can be detected in different weft rows, but with this minor exception, the weft is not utilized for any patterning effect. Patterning was achieved with the warp — either, in its simplest form, by varying the color or fiber, or by warp manipulation. Change in texture sometimes was produced by setting groups of several yarns in a field of paired warps.

A careful examination of the sequence of warps in the plain twined fabrics, where some striped effect is achieved, is revealing. Where the relatively rare counterclockwise doubled yarn is used, it is usually paired with a clockwise doubled yarn to produce a distinctive effect. Where change of colors or fiber occurs one can sometimes prove that in setting up the warp they counted off the number of yarns in the different stripes and repeated them in orderly fashion. This leads us afield from our subject of textiles and gives us a basis for a theory that the original motive or incentive for counting came with textile development. Primitive people who do not weave are seldom able to count above twenty and with some the word for *five* is synonymous with *many*. Fabric construction with orderly repeat necessitates some systematic counting and if fabric construction has the antiquity we now suppose, it is possible to believe that this may have been the stimulus for the development of a numerical system.

To clarify the basic twined construction and its variations the reconstructions shown on this page were prepared. The first type made with parallel paired warps is most common. Most examples have simple warp stripes such as blue or brown groups in a predominantly white field, or groups of pairs which are one-quarter bast alternate in various numerical combinations with pure cotton pairs. The second type with the warp pairs alternately split may be used throughout a fabric or may be used as a stripe bounded by parallel warps.

Another reconstruction shows a simple method of achieving decorative effect through warp manipulation. As a rule it is employed as a background or in conjunction with more complicated patterning devices. These can be extremely intricate. In one of the more obvious patterns made by combining these two movements the field is red with a central panel in which blue and red yarns are paired. By

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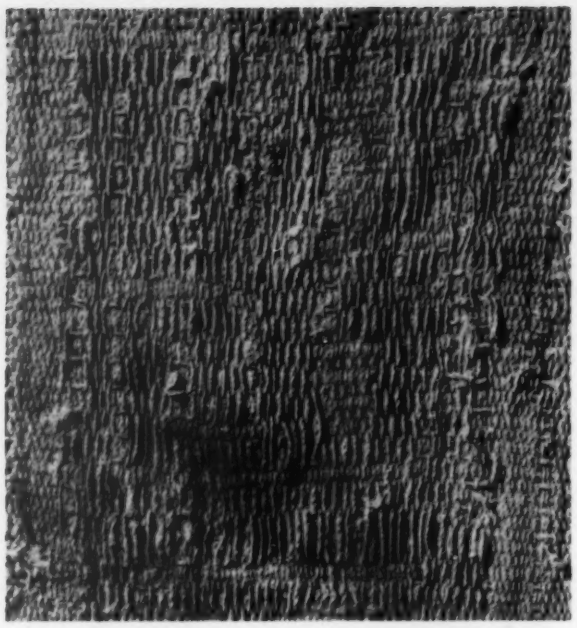
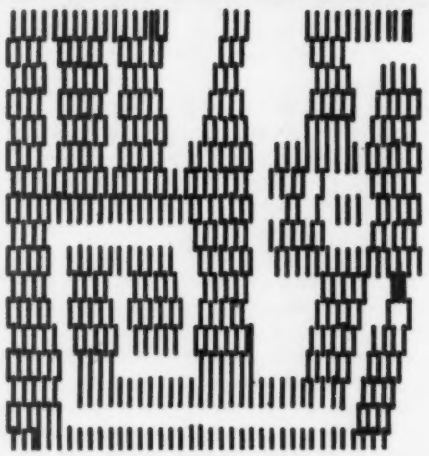
Left: Reconstructions and examples of various methods of twining — (a) Plain twining (b) Warp threads so worked as to set details of design in a zigzagged warp field (c) Twining with warp pairs at alternate weft rows (d) Only half the warps are visible as the alternate ones always slant in the opposite direction.





Above: Single face warp float design set in a plain weave field. Below: Diagram of warp positions reveals bird figure with head and neck upraised. Photo shows one-half of symmetrical panel.

Oldest Fabrics . . . *continued*

transposing the warps the blues are held to one face of the fabric with the red exposed only in the S-shaped design. Unfortunately, the examples of such figures are too few and fragmentary to determine what they portrayed. Our only clue to the art style of the period comes from two small carved gourds which both show angular anthropomorphic figures. The nature of this carving on a medium permitting freedom of line suggests that the treatment of such figures was influenced by experience with the angular limitations of textile construction and that textiles were the principal medium for artistic expression of the people.

Patterns created with the zigzag warp movement, unlike many woven warp patterns, do not automatically have the reverse image on opposite sides of the fabric; they are clear only on one face. In one instance what appears to be part of a geometrical design is repeated in reverse in such a way that if the piece is folded along the weft where the repeat starts, the two surfaces which face up are virtually identical in the arrangement of detail. Such construction necessitates not only counting off the warps but also the weft rows.

A variation of this zigzag twining occurs where any given warp is transposed either left or right beyond the adjacent warp pairs. This requires different planning from the other examples mentioned. In some specimens the warps are not only transposed but are twisted in relation to their original position. As the warps are fixed at both ends, it becomes necessary to calculate a sequence of manipulations which will, when reversed, bring the warps back into normal position. Some small units are not difficult to reconstruct, but the greater number of warp pairs and weft rows involved, the more difficult the problem.

These are the major categories of twined fabrics. A few further comments are applicable to all of them. In the actual process of twining, the weft elements in over 99% of the cases are twisted about the warps in a counterclockwise direction. Such a standardized practice is surprising, since there is nothing other than tradition to determine the direction of the weft twist. The wefts themselves are short and make only one passage across the warp as shown in the reconstruction. While there are several ways of starting the weft with or without various kinds of knots, the terminal selvages are always identical, being finished off by knotting the two weft elements in each row outside the last pair of warps.

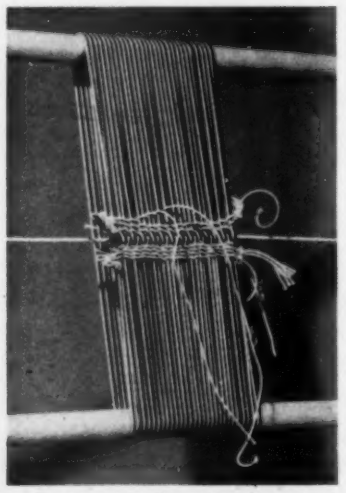
Weaving of Minor Importance

Weaving as indicated by its ratio of occurrence is of relatively minor importance in this period. It is nonetheless of considerable interest as it serves to show the relationships between twining and weaving. Sometimes short wefts, knotted at the side, are handled essentially as in twining, although continuous wefts are more frequent. Furthermore, the woven fabrics all have compact twined ends, where the warps are continuous and looped. Finally, tradition influences weaving in that the woven pieces are predominantly warp face, and all patterning is in the warp. Warp float yarns may be transposed, or parallel. The finest example of this technique is shown on this page. As there is no difference in the color or weight of the warps the two bird figures do not stand out clearly and probably never did.

Possible Mechanical Devices Used

The question of what mechanical devices were used in the twining and weaving cannot be answered by direct evidence. As in the case of spindles, no loom parts were identified. However, from examination of many fabrics themselves, warping procedure may be deduced and is corroborated by the survival of the same process among some primitive people today. A frame loom must have been used consisting of two parallel sticks and a cord fastened to supporting uprights. In warping the yarns turn about the cord first from the top, then from the bottom, as shown here.

The first step after warping was to secure the warp ends by compact twining after which the wefts were inserted. For both weaving



A reconstruction showing the warping system used for both twined and woven fabrics. The warp yarns turn at the transverse cord which is pulled out after all the weft rows have been inserted.

and twining, a needle or bodkin must have been used for inserting the last weft rows. On completion of either the twining or weaving, removal of the cord freed the looped warp ends. There is, of course, no shedding, hence no necessity for heddles, in twining, and we believe that no heddle had been developed even for the woven pieces. This is borne out by some fabrics which combine weaving and twining. In one example, the wefts from two sheds in the woven area are combined for one twined row in the adjacent section. A heddle in this instance would have functioned only for the woven area and it

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Basket weave, with diagonal warp floats, greatly enlarged.

Cotton fabric made about 2300 B.C. showing a combination of weaving and twining. The warp float figures were originally blue against a red field. Selvage at right.

Oldest Fabrics . . . *concluded*

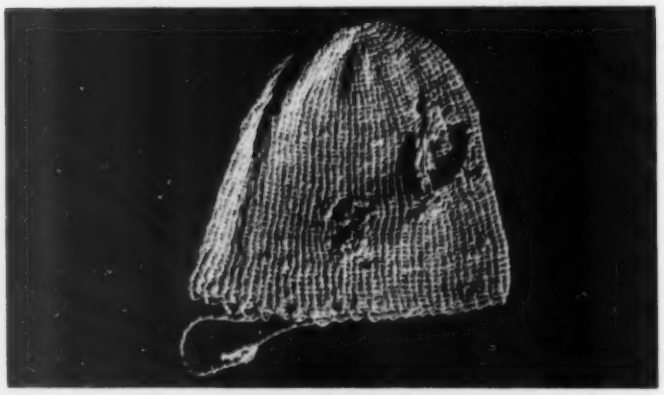
is probable that shedding was done only with the fingers.

Loom sizes have to be deduced from the relatively few complete pieces, but from these we can see that the size varied considerably. Some are only five inches square complete, and other rare examples range up to about four by five feet. Obviously there was no standardization of size and proportions.

As yet we cannot be sure how the finished fabrics were utilized. Some complete pieces are too small for any obvious function while the absence of sewn seams or poncho-like neck openings indicated the absence of the garment forms used later in Peru. From the position of fabrics in the burials we may draw some conclusions, most of which are negative. They were not used to wrap the dead and none could be identified as breechclouts or head coverings. None were of heavy weight or compact construction which might function as blankets. About the only conclusions we can draw is that the larger ones were used as simple cloaks or shawls and that in spite of the abundant production of textiles the development of garments was on a very simple level.

Looped Fabrics

In addition to the twined and woven fabrics there are many more which are all made with a single element. Most abundant is a looping technique in which a single yarn is interlocked in successive rows of *figure 8* loops. Although it should not be confused with knitting, it is similar in that it can be used for both cylindrical or flat products which have considerable give or stretch. This is by no means an unusual construction for it is still used by various native peoples. A modern ethnological example, shown here, is an unfinished bag from the jungles of Northeastern Peru in the Amazonian basin. A spacer



Small pouch made by interlocking half-hitch loops. This is of cotton yarn and dates from close to 1700 B.C.

or gauge is used to set the size of the mesh as in netting, and a bone bodkin is needed to advance the yarn or cord end in its course.

As employed in the early period in Peru, the technique seems to have been utilized to its full extent. Several variations in the method of interlocking the loops produce differences in texture and by lengthening certain turns of the yarn, openwork geometrical patterns are achieved. Naturally in this process there is no limiting factor to the size of the product other than the patience of the artisan and the purpose for which it was intended. The largest found measures ten feet by nineteen inches and is incomplete.

A more simple but less popular looped fabric has loops laid like half hitches. The best example is the small pouch which has some color variation but does not show any attempt to utilize the patterning possibility of the technique.

Still another single element construction are the netted fabrics which, from their frequency of occurrence, were obviously important. The most common examples are the fishnets, for fishing was an important feature in the economy of the period. Those with the largest mesh, which ranges from one to one and a half inches, must have been for some type of seine net. One such net with floats still attached was found and apparently resembled quite closely a type of seine still used in the same region. If the spacing of the floats approximated the present-day spacing, this specimen would have been about 100 feet long. Such nets are used today by four men who will wade out into the surf at low tide, then drag the net directly back to the beach. They do not function as gill nets because the nature of the shore line with the prevailing winds and surf make gill netting impractical.

The small mesh netting used both for pouches or bags and for rectangular fabrics may well have been used for the taking of small fish and shrimp in the local streams, and for the capture of a large edible sandflea, common in the local beaches.

It is beyond the scope of the present report to discuss the matting and basketry and other artifacts. One item, however, should be mentioned and that is the presence of bark cloth or tapa. Occasional fragments scattered throughout the deposit show that it was used simultaneously with the fabrics mentioned. The source of the material has not yet been identified and seems to be something of a mystery, for none of the local native trees yield suitable bark. One wonders if it could have been brought through trade from the Peruvian and Ecuadorian rainforests where suitable species do grow and where bark cloth is still made.

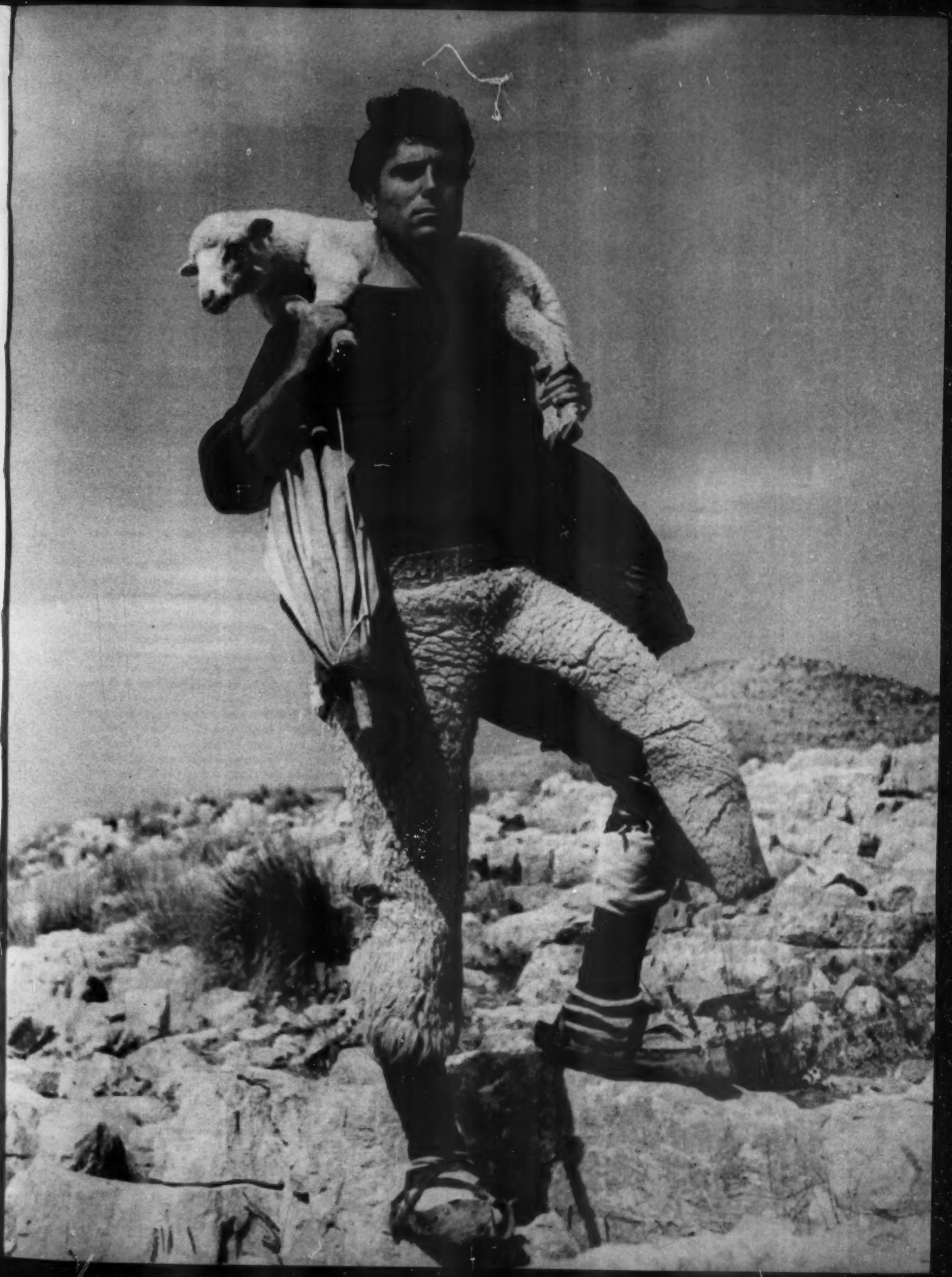
As is true of most archaeological work, many such problematical questions are encountered and often have to be left unanswered. If the task of reconstructing life in prehistoric times is a fascinating one, it still has many limitations and disappointments. One never knows quite where the study of a specific problem may lead. In the present instance, from a textile analysis, we have been led to speculation of the origin of numerical systems. By the complete lack of wool, and other evidence which indicates that the llama and alpaca were not domesticated before 1000 B.C., we branch off into another field with a suggestion as to the motive which lay behind the domestication of these animals. In a land where a spinning and weaving tradition was well established for some 1500 years, would it not be much more reasonable to suppose that an interest in wool was a much stronger reason for domestication than the desire to have a permanent meat supply or to have the animals as beasts of burden?

Interest in the way in which bast fibers were handled in this early period has led us to check on the direction of twist used in spinning bast fiber among American Indian tribes, with the result that there appears to be a distinct distribution of the two possibilities. North of the equator the general practice seems to have been to twist them clockwise, while south of this line the reverse is true. Does this reflect the action of sunlight on plant growth? Such flax and other fibers we have checked show a basic difference, the southern samples twisting in opposite direction to the northern ones when moistened. The implication is that if we wish to produce linen yarn of the same quality, flax grown in the southern hemisphere must be spun in opposite manner to the practice for northern hemisphere flax.

* * *

Can any lessons be drawn from our study relating to the question of human culture as a whole? It would seem so, for this example of a well established tradition in textile production, lasting for some 1200 or 1300 years with no radical change, shows what could be accomplished on an otherwise very primitive level. Perhaps the practice of grading human cultures on the basis of such durable artifacts as stone implements is completely misleading. Is it not possible that the making of textiles is a far more ancient accomplishment in some areas than has ever been suspected and might have had its inception in the so-called paleolithic era?

Opposite: A Calabrian shepherd boy uses rough woolen sheepskin leg coverings which give basic fabric needs of warmth, texture and pliability. *Courtesy Lux Film Distributors.*



On Fifth Avenue workmen exercise their traditional skill for repair of fine Oriental and Aubusson carpets with colored wools

Courtesy A. & M. Karagheusian Inc.

THE ROMANCE OF THE RUG

The traditional methods of rug and carpet weaving have been assimilated by modern carpet looming techniques. Unique among textiles, the carpet is still proving capable of progress with the aid of modern research.

THE FINEST FABRIC ever invented for use under foot was the creation of nomads who had neither houses nor artificial floors. This fabric, although more durable under wear than any other, was never trodden upon with shoes and indeed, in nomadic tent dwellings, was often used as decoration on walls and ceilings and for warmth. Made of a heavy woven base and finished with knotted threads to form a pile surface, the rug became both a functional article and the principal art-form of the Levant and of the countries of the Near East.

Legend has given credence to the great antiquity of the origin of the rug, but the earliest historical evidences of its existence are some fragments found in Turkestan by Sir Aurel Stein which are said not to antedate the Christian era. Thus the myths of Solomon and his flying carpet and of Cleopatra and her fabled rug must refer to tapestries, which were made as far back as 1500 B.C. Tapestries are structurally similar to cloth weaving, whereas true rugs are knotted.

Authorities claim that the carpet and rug as we know them had their inception at the end of the fifteenth century and reached their peak of craftsmanship a century later. The mosque of Ala-ed-Din at Konia has a piece dating from the early 13th century, but this and other isolated exhibits may be exceptions. The later Crusades and the invasion of the Turks under Suleiman into Europe introduced the rug maker's art to western peoples. The Polish rug industry is said to owe its origin to captured Persians who became transplanted artisans of this Slavic country, thus introducing their craft.

Rug and Carpet Making Technique

Both rugs and carpets are products of the loom. The modern method of power looming of certain types of rugs and carpets (Axminsters) differs only in degree from the antique, handcrafted creations of the gifted oriental nomads and shepherds.

The earliest method employed in the East consisted of a loom made of four poles joined together in the size that the rug was to be woven. A set of threads (the warp) was then stretched between two rollers or beams in a vertical position. These were interlaced with another set of threads (the weft), each weft thread passing alternately over and under the warp threads. In the finish, the weft and warp, usually of cotton, are only on the back, the pattern on front being created by tufts of wool inserted and tied in knots forming a design which is the individual choice of the buyer or one established by tradition.

One or more weavers work on the same rug under the rigid auspices of the khaidi or head weaver who pins a pattern chart to the center of the loom and from it reads off the colors and patterns to be used. He chants in a sing-song voice and his co-workers, often women and children, orchestrate his instruc-

tions in brilliantly colored wools. Seldom looking at their work, they rapidly loop the yarn which forms the pile around two warp threads and knot it. After each row is completed it is knocked down tightly against its fellows with a heavy metal comb and the ends of the pile are rough-trimmed with a knife or shears. When all of the knotting is finished an expert clips the pile to a desired, even height. This brings out the gem-like quality of the true Oriental design and finish. The closer and more even the shearing, the cleaner and crisper the design.

This method of rug making was a natural result of conserving the wool crop surplus by the wandering shepherds of the Near East. Sparse grazing lands, rugged, rocky hills and climatic extremes all tended to create a type of fleece that was thick and admirably adapted for rug making. In fact, in modern rug manufacture in America, a large percentage of the wools used are imported, since our climate is not conducive to raising wool suited for fine rug making.

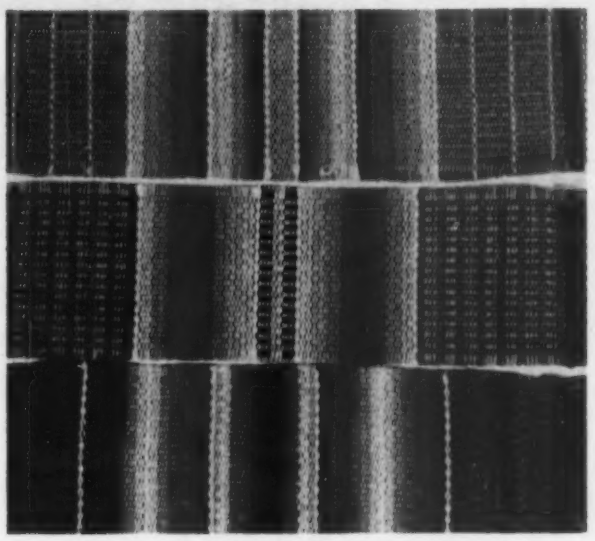
The shepherds accomplished the development of the rug. Since their music was rudimentary and pictures were more perishable, it was inevitable that this craft should develop into a fine art. Caliphs and Sultans, Sheiks and Khans covered their floors, walls and ceilings with fine rugs. Shepherds traded their woven products for grain, swords and other wealth. The rise of Islam also encouraged the development of this art, since the man of means wanted his own personal prayer rug which he used five times daily in his genuflections toward Mecca. So the rug became a symbol of wealth and piety and was prized and valued by all.

Rug Design

The rug design must be pleasing at a short distance from which detail cannot be clearly seen. From this developed a scheme of composition upon which the design masses are based. Usually it starts with the running edge or border divided into two or more parallel bands. Inside of this border is the field, a tonal construction which bears shaped panels in a variety of combinations. More often than not, there is a prominent central medallion which may be associated with four quarter panels in each corner of the design.

Motifs seemingly of obscure symbolic significance are often variations of designs whose meanings are lost in antiquity. In floral forms can be recognized the date palm (and its conventional form the *palmette*), rose, jasmine, willow and cypress, but others are unrecognizable except as generic flower forms. The cloud band is of Chinese origin and probably is an abstraction of the great snake or dragon idiom. Overall patterns which include the herati (diamonds and flowers) and the mina khani are not comparable to natural flora.

A superb Keshan rug whose rich ornament suggests the wealth a fine carpet traditionally symbolizes



American early nineteenth century patterns of all-wool handwoven carpet

Courtesy E. C. Beetem & Son

Western Rugs

The British early started (with hemp warp and weft) to imitate the spoils of war brought home by their seafaring adventurers in the East. Captive Moslems had taught 16th century artisans their skills and the use of the Ghiordes knot.

Early designs show patterns resembling embroidery including heraldic devices and often dates. The earliest known piece of this type is the Verulam carpet which dates from 1570. The second type resembles early Turkish carpets and, known as *Turkey-work*, were used for chair and sofa coverings.

In more modern times, the British gave great impetus to power-loomed carpet manufacture when the declining rug industry was revived by William Morris. The persistence of British technical efforts to solve rug making problems is attested by the common names given to our present day floor coverings . . . Moorfields, Axminster, Donegal and Wilton, to name but a few . . . which are in many instances the names of English manufacturing towns. However, the most interesting rug story of modern times deals with the development of today's carpets in the United States.

Rugs of the United States

At the close of the 18th century Philadelphia, responsible for many innovations, was the city which gave birth to the first carpet factory in America. W. P. Sprague started his establishment in Quakertown in 1791, and America thence evolved carpet making machinery (especially broadlooms) to a point surpassing the rest of the world.

The chef d'oeuvre of Sprague's factory was an Axminster carpet bearing the arms and achievements of the infant United States. Alexander Hamilton was so impressed with this work, and with the possibilities it offered to American workmen, that he recommended tariffs on imported rugs and carpets to protect the homegrown product and its future.

In the early days, looms were imported from Great Britain and the continent. Before much time had elapsed, however, Yankee mechanics were leaving their European mentors far behind. The Jacquard pattern machine was introduced into America almost as soon as it was invented.

In 1825 Henry S. Burdett engaged Alexander Wright to

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A formal border encloses flowers and foliage sprays whose rich colors illuminate this Persian Sarouk design

Courtesy A. & M. Karagheusian Inc

Carpets . . . continued

manage his Medway, Mass. mills for making ingrained carpets. Fourteen years later Erastus B. Bigelow started an experimental plant at Lowell, Mass. and came up with the first power loom ever used for making carpets. While this gadget turned out ingrained carpets, Bigelow's genius led to his perfection of the Brussel's power loom in 1848.

Later in the century an Englishman who emigrated here named Johnson opened a plant at Newark, N. J. for the making of tapestry and velvet woven rugs. His method consisted of printing the pattern with dyestuffs on the individual strands of wool.

And so the industry grew. In 1876, Halcyon Skinner invented the spool Axminster, and another Philadelphian, James Dunlap, developed a process of printing tapestry and velvet carpeting. The latter part of the 19th century saw a rise in factories making imitation Smyrna rugs. These were Axminster types, but double faced.

At this time 27-inch widths were the ultimate in power loomed carpets. Rugs were made by sewing strips together, but at the turn of the century the invention of the Broadloom gave rise to Wilton, Axminster, Chenille and other large one-piece floor coverings.

The types of carpets for which American makers are famous are the following:

BRUSSELS CARPETS

As the name implies this type of carpet was first manufactured in Belgium. It consists of a loop-pile surface backed by a strong foundation of linen, jute and cotton yarns. The pattern itself is formed by differently colored threads of worsted yarn, looped over a wire. Through the use of jacquarding machinery, it is possible to select and raise the threads, thus forming a pattern.

WILTON CARPETS

Wilton is quite similar to Brussels in manufacturing process, but even though the looms are inter-convertible, here the simi-

larity ends. The surface of a Wilton is rich and velvety, not ribbed like Brussels. This is caused by the loops of worsted yarn being cut through the use of a wire that ends in a knife blade. This knife is outside the fabric when the wire is inserted, but cuts the loops automatically when it is withdrawn. Because the knife-cut exposes the ends (instead of the side) of the wool fibers a rich plus effect results. Since Wiltons are made with as many as 128 points to the square inch, it is possible to create carpets which rival any but the finer Persians.

AXMINSTER CARPETS

The newest in loom carpet developments has taken its construction cues from its famous ancestor, the Persian. Like the famous orientals, Axminsters are tufted. Where the Persian is knotted, Axminster machinery inserts tufts and binds them without knotting. These tufts are inserted row by row between the warp threads and secured by binding to the weft. As a result, the surface design is composed of myriads of individual tufts.

There are two methods of making Axminsters. In the first, the pile yarn is pre-arranged to make the design before it is loomed. This process is called *setting*. The second is a method of using grippers or nippers to insert cut-tufts into the weave of the fabric. This is the method usually used in combination with jacquarding.

CHENILLE CARPETS

This most modern of all floor coverings is in vogue because it can be made to specifications. It can be constructed in almost any length, width, pattern, design, shape or coloring . . . all in one piece. Its manufacture involves two processes — formation of chenille fur and the weaving of that fur (the weft) into a carpet. It is unique in the fact that it is the only cut pile carpet in which the weft forms the pattern. Chenille carpets are widely in demand by theatres, hotels, clubs and other institutions requiring unusual sizes of floor coverings.

TAPESTRY AND VELVET CARPETS

If it's made with a looped pile it's tapestry, if with a cut pile, it's velvet: Jacquarding is never used with either of these types. Colors are generally printed on these carpets. The entire design (if any) is on the surface, resulting in great economy. Printing can also be done on a single frame of yarn (instead of dyeing 5 separate frames like Wiltons) and woven into a complete unit. These carpets are in demand primarily where large yardage is a pre-requisite of a sale.

A Flourishing Industry

This sturdy industry can be considered in spite of its relatively modest volume as a flourishing element in the overall pattern of American economy. The unofficial 1950 estimate places the value of shipments of the entire industry at slightly over $550,000,000. Ninety-five factories, located primarily in New England and the middle Atlantic states, are engaged in manufacturing this total. They produced last year 87,700,000 square yards of wool and blended floor coverings. This production was exceeded only by the 1948 totals which reached the all-time high of 90,000,000 square yards.

To turn out this volume the industry employs approximately 35,000 workers. Six companies did over half of all the business. Significant is the fact that these companies are publicly owned and their stock is widely distributed, much of it being owned by the workers themselves.

Present-Day Problems

For many years the wool industry has looked around for a solution to a basic problem; i.e., the extreme difficulty of getting the kind of wool suitable for making rugs. It is imported from seventeen different countries, all of them primitive and not-easy-to-reach areas in the Near East. Because carpet manufac-

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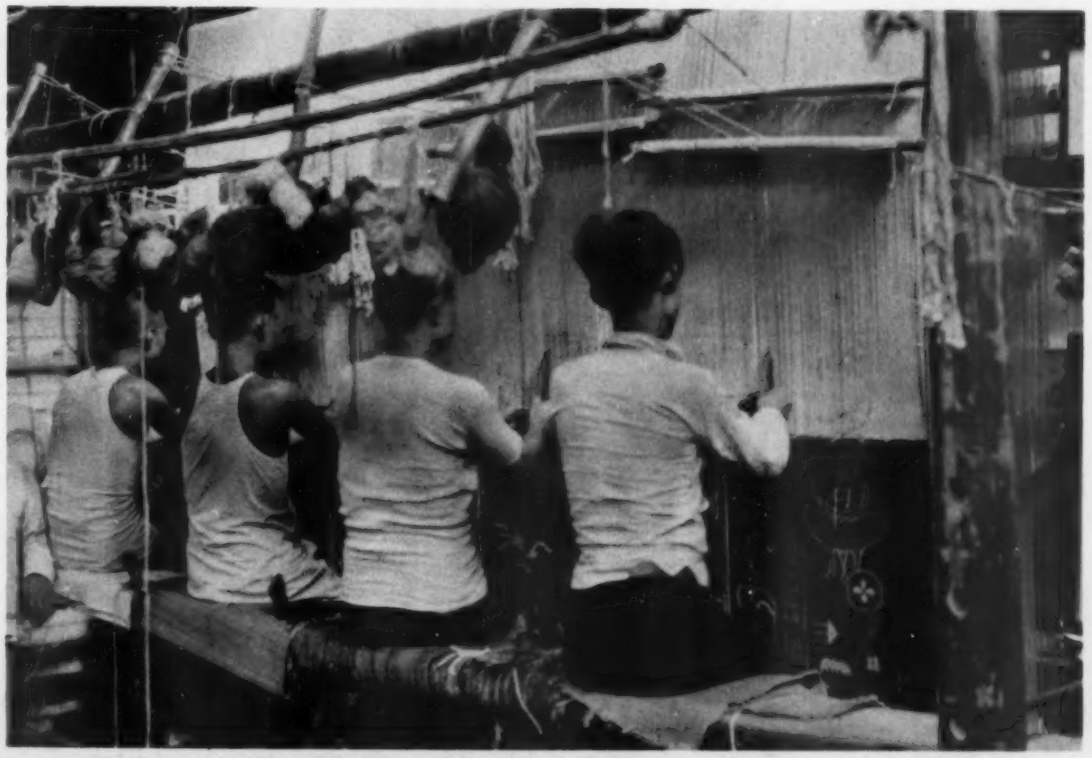
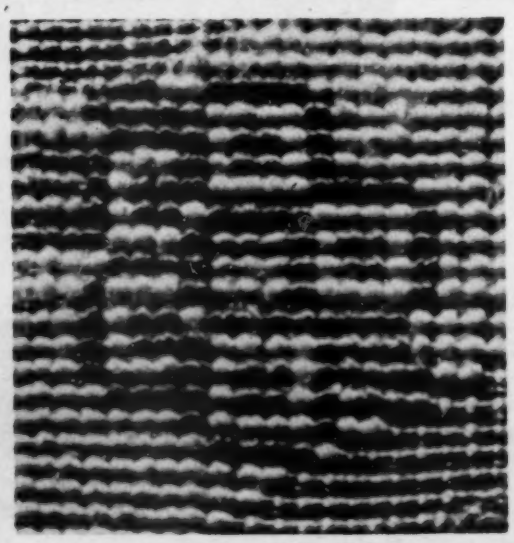


Trade routes, followed by Marco Polo through Turkestan to China, were responsible for the spread of rug making to the far East, where the traditional handloom is still in use



An ancient all-silk Persian carpet design incorporating the arch and hanging lamps typical of prayer rugs

Inset: Back of the same rug, enlarged, shows over eight hundred hand tied knots per square inch *Collection V. Jinishian*

Carpets . . . concluded

turers had to work so far ahead, the price structure was always unpredictable and inventory losses could be great. The high price of wool in recent years stirred the carpet industry to take the plunge and look around for a man-made fiber which would bring greater stability to the entire carpet industry.

A well known authority on carpet manufacture has stated that "the combinations of fibers are so many that it is not possible to point up any one blend as the most desirable for a particular type of structure." The truth of this is borne out by the fact that rayon, nylon, dacron, orlon and a whole host of kindred man-made fibers are being incorporated today in blends that compare favorably in color, texture and wear with fine orientals, yet are priced within the budget of the mass consumer.

The Future of the Industry

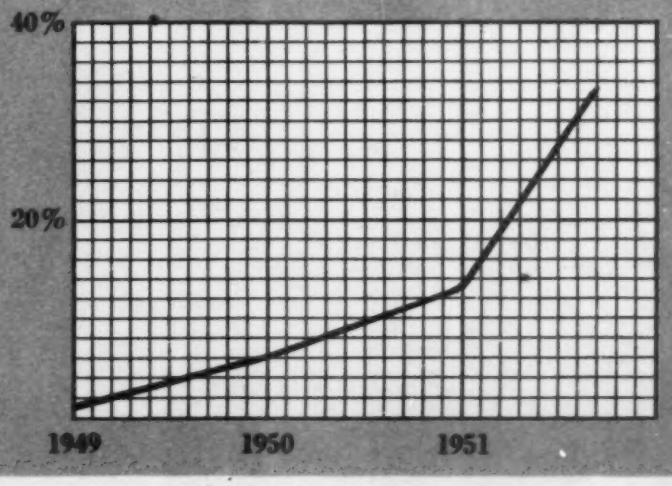
Popular taste and the American high standard of living ensure the perpetuity of the American rug industry. While post-war development of certain types of single dwellings containing radiant heating suggested a possible curtailment of sales, and imported rug wools began to out-price the mass consumer market, as usual American ingenuity and enterprise supplied the factor necessary for survival.

The almost daily development of new man-made fibers, and the present plans of big producing corporations for expansion of fiber manufacturing plants make possible the large scale use of blends which will give better wear, clearer colors and a performance equal to that of the traditional all-wool floor covering. In addition, the new fibers are moth-proof and some are acid-proof, and such qualities do not deteriorate with normal use and cleaning. New synthetic backings are available, too, for rugs which enable them to lie with plumb-line straightness. Rugs in colors that glow under black light are being manufactured for theaters, hospitals and other institutions where under dim illumination steps and directions must be clearly seen.

Since price is an important consideration, the consumer is directly affected by the increasing use of the new fibers. Experience in other fields shows that their use can contribute a stability in costs which enables manufacturers to work to closer margins, passing the price benefits to the consumer. The recent fluctuations in the wool market show how advantageous such a factor will be in the industry. In addition, the continued construction of many multiple-unit dwellings, which almost invariably require floor-covering as a lease requisite, and the expanding population, ensure stability of demand in spite of increased wearing qualities and longer life.

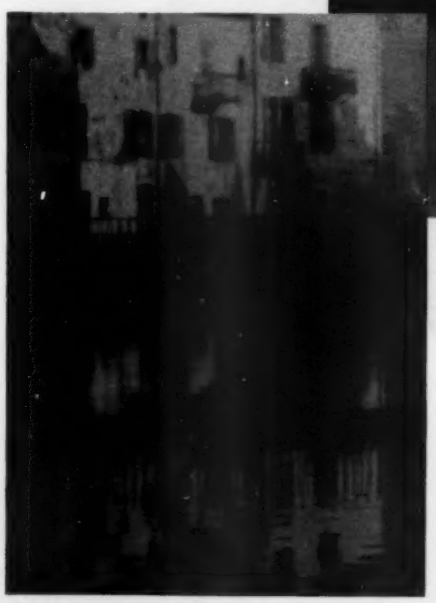
The human element is an integral part of the great tradition of handwoven rugs

Courtesy The Carpet Institute



The graph shows the increasing percentage of rayon and other man-made fibers used by the rug and carpet industry today.

The Photographs of Louis Andrieux



Images miroitantes
qui se gravent sur la cire
molle de l'enfance
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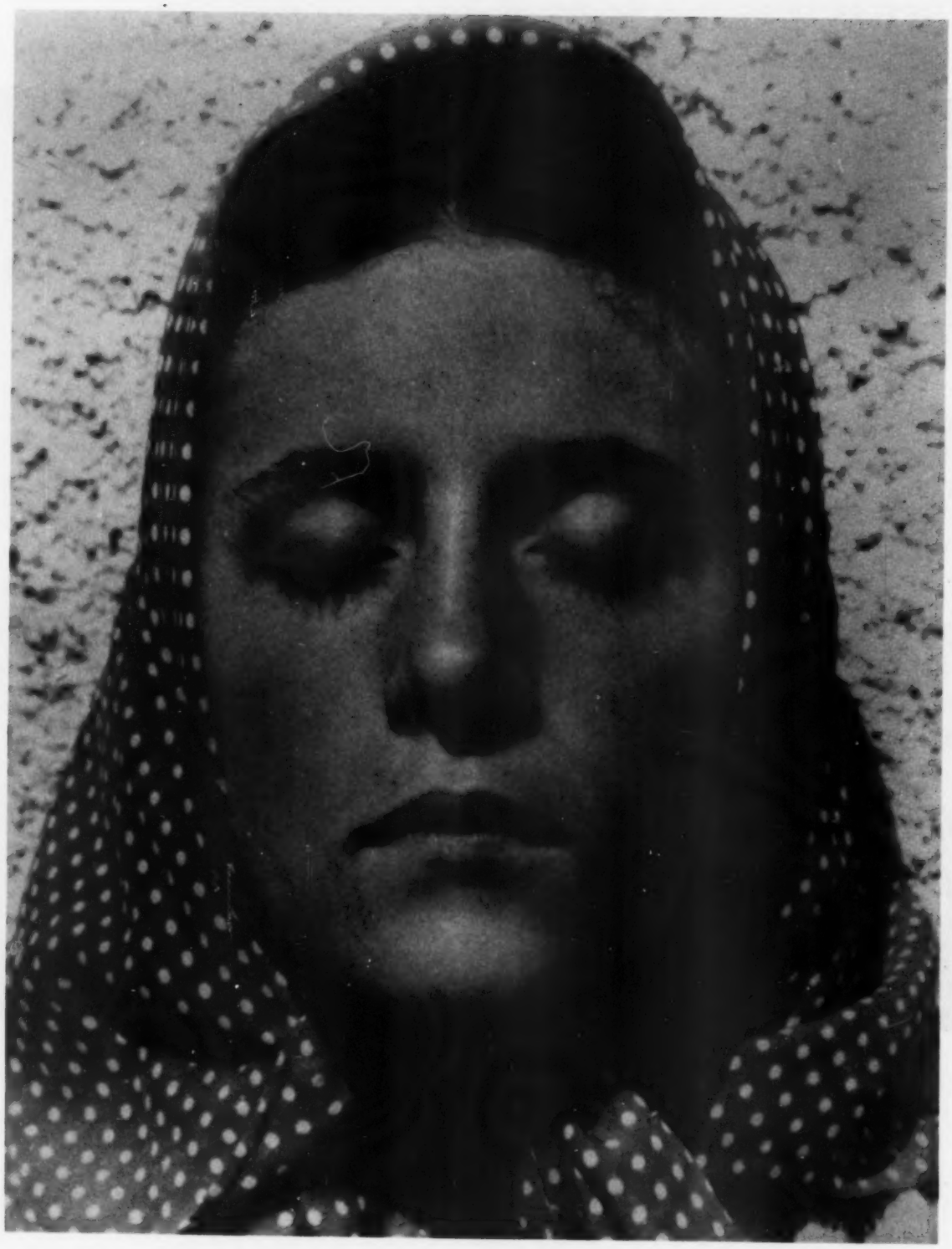
MIRRORED IMAGES ETCHED IN CHILDHOOD
WHICH LIE OBSCURED IN MEMORY FOREVER.

Feu caché, feu sacré
obscurs pressentiments

FIRE, HIDDEN AND HOLY,
DARK FOREBODINGS



Secrets dépositaires d'un fabuleux trésor

SECRET KEEPERS OF A FABULOUS TREASURE

Un instant de bonheur

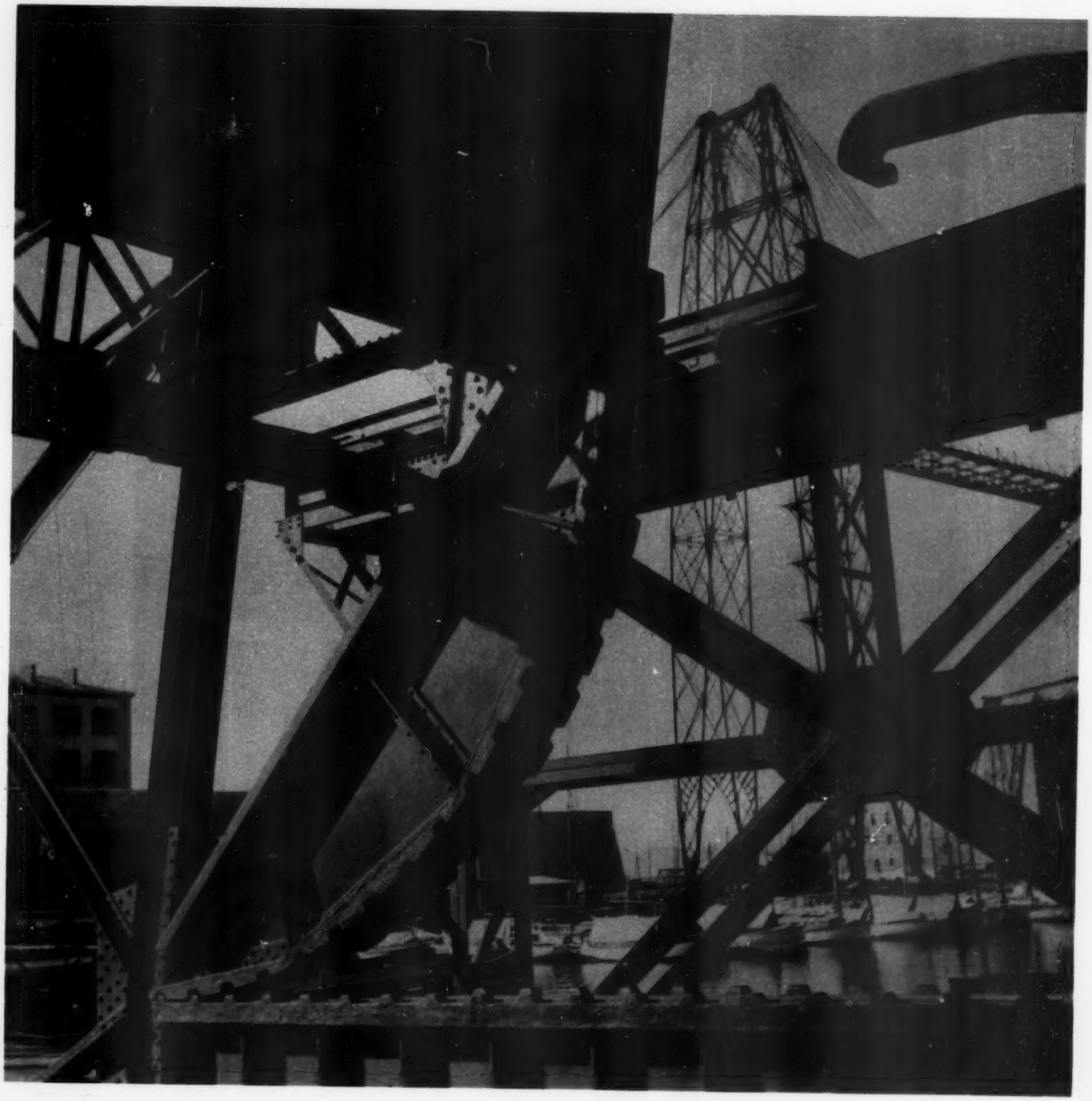
A MOMENT OF HAPPINESS

Vent, frémissement . . . lumière envol

WIND, RUSTLING . . . LIGHT, SPEEDING

Méditations . . . attente

CONTEMPLATION . . . WAITING



Moderne Prince Charmant

A MODERN PRINCE CHARMING

A chacun selon sa faim

TO EVERYONE HIS HUNGER

Réminiscence

REMINISCENCE

Frimats

RIME

Il résultera quelque chose . . .

SOMETHING WILL FOLLOW

JOTTINGS FROM A COLOR NOTEBOOK

by

HOWARD KETCHAM

Howard Ketcham, noted industrial designer and industry's expert color technician, gives many pointers which will be of value to fabric converters and designers. Recent research, the validity of which is now accepted, proves beyond doubt that color can be engineered to promote sales by satisfying the end-user's needs more fully. These notes explain modern color classifications which have led to discovery of new facts.

This country is more color conscious today than ever before in its history and a look around any up-to-date business office will prove it; stenographers with lipstick and platinum blond hair who wear eyeglasses in bright red plastic frames are pounding pastel colored typewriters in rooms whose walls may be, variously, light yellow, tan or dark green.

Time was when there was a trend toward black automobiles. Home decorations to be considered in good taste were subdued. Bathing suits were drab and no respectable male wore a green shirt. Today, practically every item of merchandise, from kitchen gadgets to magazines, has burst into color. Man is succumbing to its use on his person. When color television comes into general use, it will unquestionably exert a tremendous influence in making us yet more color conscious.

Color with a purpose is a present-day trend. The Navy wants to make its submarines more livable for crews cooped up for weeks at a time in cramped quarters by using color schemes in the various compartments that will help make the interior seem bigger, less crowded and more pleasing. Factories report increased production, fewer rejects and fewer accidents, when the walls and machinery are painted in colors *engineered* for efficiency. Homes are being made more livable by decorators who pick colors because they *do* something, not because they happen to please the moment's whim.

Throughout the course of history people have been aware of color, for both its appeal and practicality. A story is told of Napoleon's Empress Josephine for whom color was just another tool to use in court intrigue, in her long-standing feud with Napoleon's sister, Countess Pauline Borghese. With sisterly concern, Josephine helped the Countess pick out a green fabric for a gown to wear to a state reception. Then hastening back to the palace, she ordered a complete redecoration of the chambers in which the reception would be held. The new color scheme, carried out on the walls, the draperies and upholstery, was all in a particular shade of blue — a blue which, as Josephine well knew, would make the green of the Countess' dress appear cheap and gaudy.

What is Color?

Color vision, one of the most marvelous of human gifts, is also one of the least explored. Nobody, not even specialists in this area of knowledge, knows much about what color is, or just how we see it, or precisely what its effects are on human well-being. Yet, no element in our sensuous natures will yield us greater or more varied pleasure than the perception of color.

In ancient times the Persians practised a form of therapy with various colors and in the Near Eastern cultures amulets of various colors were used to ward off particular forms of the evil eye. The physician to King Edward II had the ruler's room painted red to ward off smallpox.

Our knowledge of the physical nature of color began with Isaac Newton who, in 1666 passed a beam of white light through a glass prism and found that it was refracted into the hues of the rainbow, or spectrum — red, orange, yellow, green, blue, indigo and violet — which he called the 7 primaries. He deduced that the nature of color was purely due to wave length. Goethe was a poet and philosopher. He claimed that the nature of color depends upon the observer's condition. Until recently Newton's and Goethe's were the only two concepts.

How We See Color

Let us get clear a few of the elementary facts about the way in which the eye reacts to light. Perhaps the first fact we note is that the normal eye is largely color blind; that is, the periphery, or outermost part of the retina, is entirely color blind; a large portion of the microscopic organs which constitute the whole of the retina are color blind; the whole of the eye is color blind in twilight (low illumination); and even the most color-sensitive parts of the eye tend to become color blind when

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stimulated by certain definite balanced or complementary wave lengths of light. This is an amazing fact when almost all the time we seem to be seeing color.

Another way of stating the whole situation is that only a relatively small part of the eye is color-sensitive, and this color sensitivity rests continually upon a basis of color blindness; it rests thus only precariously, so to speak, tending always to fall back toward color blindness. The normal eye has a *duplex* function, depending on two distinct kinds of light-sensitive elements, the *rods* and *cones*. Only one of these elements, the cones, ever sees color at all. The other, the rods, can never see anything but grey. With the cones we see surfaces lighted by unbalanced wave lengths as colored, but even with the cones we see surfaces lighted by balanced wave lengths as grey; of course, what the rods see is fused in the brain with what the cones see, and the net result is a sensation which may have any quality, all the way from the purest grey to the purest color.

Color Blindness

About eight per cent of American men are color blind, to the extent that they find considerable difficulty in distinguishing reds from greens. Color blindness is often known as Daltonism, after John Dalton, an eighteenth-century English chemist whose optical failings led him to attend Quaker meetings attired in drab green coat and blazing red stockings. It is transmitted from one generation to another through women who, oddly enough, are very rarely color blind.

The white races are more apt to have red and green color blindness than Africans, American Indians and South Sea Islanders. With the exception of apes and men, practically all mammals are color blind. (A red flag doesn't disturb a bull a bit; it's the movement that infuriates him.) Birds and some fishes, however, see color very well, and some varieties of owls can see infra-red light, which humans can't. Bees can see blue or yellow, but fumble at red. Mosquitoes have a poor sight for yellow, which is the reason for their tendency to ignore porch lights which are dyed that color. Too much caffein can make you temporarily color blind; people with jaundice see the world in a yellow light.

In view of the number of color blind people in the country, the traditional use of red and green safety signals exasperates color specialists. Even for people who aren't color blind, they say red is a poor color to indicate danger because, when viewed in a dim light, it is the first color to which the eye loses its sensitivity.

After viewing any color for some time, your eyes lose their sensitivity to it, and it tends to appear more grey. Sensitivity to color varies with age and, according to some scientists, with racial origin. Experiments by color psychologists show that children seem to pay most attention to yellow. Old people, on the hand, tend to become *blue-thirsty* — they don't see enough blue. So far as is known the fluids in their eyes, normally transparent, become yellowish with age and tend to filter out some of the blue light which they would otherwise see.

Most of the retina — the photographic plate of the eye — is coated with a substance known as *visual purple*, which consists of almost pure Vitamin A. When light falls on the retina, the Vitamin A undergoes a bleaching action, and it is thought that this bleaching action stimulates the optic nerve to give it the sensation of light.

Color, Light and Sensation

Color is not confined to the eye. The eye merely transmits to the brain information about color sensations. The eye is probably sensitive to only three colors — red, green, blue. All colors which can be experienced can be produced by combination of these three colors. The eye is sensitive only to light, not pigment; it is sensitive only to the reflection of light on pigments. The property of all light is determined by the chemical composition of an object. In other words, color is not vested in pigment, but it is what pigment does to light. For example, yellow pigment absorbs blue and violet and reflects all other rays. Blue pigment absorbs red and yellow. Therefore, from a mixture of blue and yellow pigments you get green light.

What we know as the color of an object is simply its capacity to absorb or reflect the kind of light which illuminates it. When you look at a piece of blue cloth in white light, for example, there is nothing in the fabric which itself gives off a blue color; the dye in the material absorbs from its illuminating light, nobody knows quite how, the colors of red, orange, yellow, green, indigo, violet and some of the blue, the rest of which it reflects. In much the same way, the sky appears blue not because it is *colored* that way. According to one school of physicists it appears that way because minute particles suspended in the air, and possibly air molecules themselves, absorb from the sun a little of every other color but blue, which they reflect. And a black object absorbs all wave-lengths of colors, reflecting virtually none. Yet black is not an absence of color. Black can be readily discerned in almost any light.

There is no such thing as *the color* of an object. There are as many different colors to an object as there are kinds of light in which they can be seen. This point is readily established by holding out two pieces of especially dyed cloths under an ordinary incandescent office lamp. One can be made to appear green, the other a deep brown. But, when exposed to daylight and displayed again, both appear the identical color of green.

Incandescent light contains more red than does daylight. One piece of cloth has a higher reflectance in the red end of the spectrum than the other, and under the reddish-yellow illuminant appears brown.

Fluorescent lighting has a marked effect on colors as illustrated in the following chart:

Color Barometer: the relation of color to mood in planning the decorative scheme for home, office or factory, is shown in this Color Barometer

EFFECTS OF FLUORESCENT LIGHTING ON COLORS

Color Samples	Lamp Designation						
	DAYLIGHT	STANDARD COOL WHITE	DELUXE COOL WHITE	WHITE	STANDARD WARM WHITE	DELUXE WARM WHITE	SOFT WHITE
Pink	Fair	Fair	Good	Fair	Good	Good	Enhanced
Red	Fair	Dulled	Good	Dulled	Good	Good	Fair
Maroon	Dulled	Dulled	Fair	Dulled	Fair	Enhanced	Dulled
Rust	Dulled	Fair	Fair	Fair	Fair	Enhanced	Fair
Orange	Dulled	Dulled	Fair	Fair	Fair	Enhanced	Fair
Brown	Dulled	Fair	Good	Good	Fair	Good	Good
Tan	Dulled	Fair	Good	Good	Fair	Good	Good
Gold	Dulled	Fair	Good	Fair	Good	Good	Fair
Yellow	Dulled	Fair	Fair	Good	Good	Fair	Good
Chartreuse	Good	Good	Good	Good	Fair	Dulled	Good
Olive	Good	Fair	Fair	Fair	Dulled	Dulled	Fair
Light Green	Good	Good	Fair	Good	Dulled	Dulled	Dulled
Dark Green	Enhanced	Good	Fair	Good	Dulled	Dulled	Dulled
Turquoise	Enhanced	Fair	Fair	Dulled	Dulled	Dulled	Dulled
Peacock Blue	Enhanced	Good	Fair	Dulled	Dulled	Dulled	Dulled
Light Blue	Enhanced	Fair	Fair	Dulled	Dulled	Dulled	Dulled
Royal Blue	Enhanced	Fair	Fair	Dulled	Dulled	Dulled	Dulled
Purple	Enhanced	Fair	Fair	Dulled	Good	Fair	Dulled
Lavender	Good	Good	Fair	Dulled	Good	Fair	Dulled
Magenta	Good	Good	Good	Fair	Enhanced	Good	Dulled
Grey	Good	Good	Fair	Fair	Fair	Fair	Fair
White	Grey	White	Dull-white	Tan-white	Yellow-white	Dull-white	Pink-white

Dulled — *Subdued from original color.*
Fair — *Color less bright than under daylight of equal intensity.*
Good — *Appearance as good as under daylight of equal intensity.*
Enhanced — *Richer in appearance. Color appears brighter than under daylight of equal intensity.*

Planning Colors for an Office

The fact that light sources will affect the appearance of colors should be taken into consideration when planning offices, where light is a critical factor. The engineer has found that more sources of light must be supplied in a dark colored room than in a light colored room to obtain a given level of illumination. Yet the addition of more light sources does not necessarily produce a good lighting job.

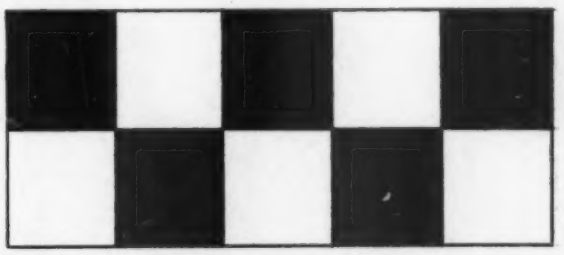
> **The results of constant research in lighting show that better and more work can be done under higher levels of illumination. Previously, fixtures were installed in a haphazard manner, but the art of lighting has progressed so that each element of the lighting installation is now carefully planned. This is a necessity where high levels of illumination are used in order to avoid transmitting excessive light into the worker's eyes. Over-all brightness can be reduced by installing a fixture that has no part which is brighter than three times the brightness of the ceiling. Semi-direct or luminous indirect fixtures seem to give the best brightness ratio between the fixture and the ceiling. The ceilings should be painted in a flat white, the walls in light colors which have a reflectance of 50 to 60 per cent.**

The following are some of the colors that have been developed by intensive experimentation and will provide a good working environment:

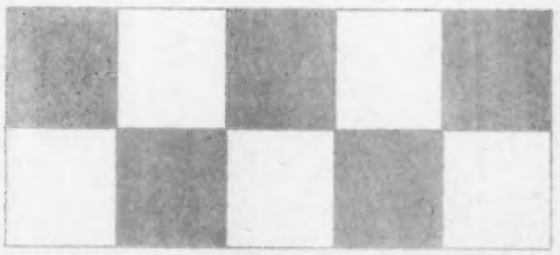
Green	Buff
Grey	Blue Green

Doors, baseboards, and dado should be painted in the same Munsell hues and chromas (color strengths) as the walls with between one and two points lower value. The floor covering can be either similar or contrasting to the wall color. Painting, cleaning of fixtures, replacement of lamps and replacement of

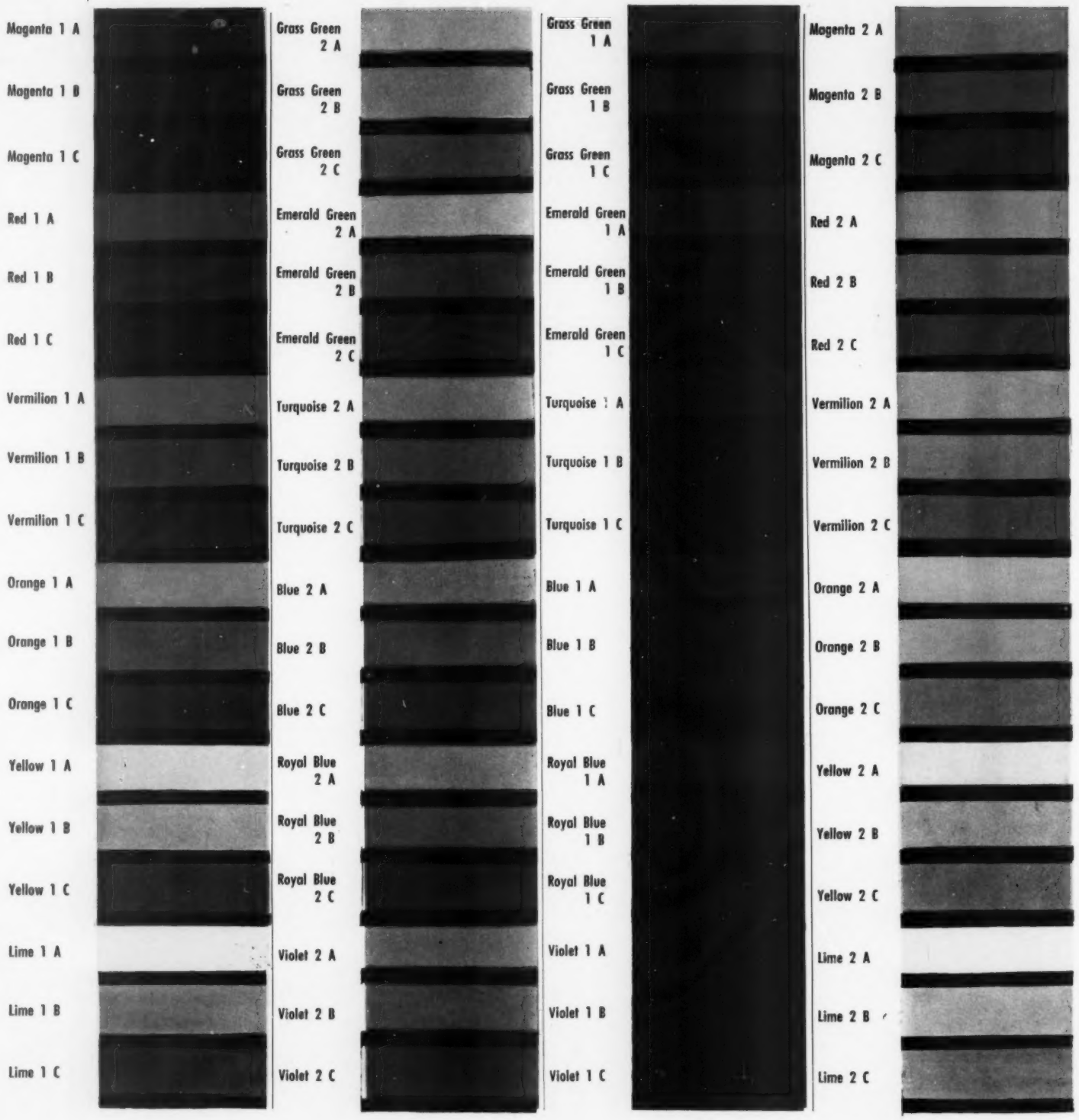
(please turn the page)



Strong contrasts are more tiring to the eyes and they result as a rule in a lowering of output



Subdued contrasts reduce eyestrain and enable a higher output to be reached in same conditions



COLOR KEYBOARD

Chart I — WARM COLORS — DARK VALUE
Chart II — COOL COLORS — LIGHT VALUE
Chart III — COOL COLORS — DARK VALUE
Chart IV — WARM COLORS — LIGHT VALUE

floor covering increase the efficiency of the lighting in an office.

The furniture in the office should be light colored to reduce brightness ratios in the workers' field of view. Desks should have a working surface which has a reflectance of at least 35 per cent so that an employee who is working on paper having a reflectance of 60 to 70 per cent will not have any brightness ratio greater than 3 to 1 in his line of vision.

It has been found through tests that the improvement of lighting conditions and environment in an office increased the work production from 3½ to 5½ per cent. These tests show that the environment of the worker is very important to an increase in work production. Brightness ratios are too high under all types of lighting unless color conditioning is provided. Therefore, high levels of illumination should not be used without providing high reflectance on the working surfaces to reduce brightness ratios.

Color and Color Terms

It is an almost universal custom to name a color by using a name for its hue. Ever since Newton's time it has been customary to speak of the *seven* colors of the rainbow. However, a well-trained eye with adequate apparatus can distinguish 128 separate hues in the spectrum. HUE is the particular color. VALUE is lightness or darkness compared to light or dark colors. CHROMA is intensity of color.

Sometimes there is confusion between the understanding of value and chroma. A comparison with music may be helpful. The *hue* of the color, of course, is the note. The *value* might be compared to its instrumentation, and the *chroma* to its volume.

Importance of Color Systems in Matching Colors

A color system is helpful in identifying colors because it provides a means by which colors can be accurately described for comparison purposes; for example, in cake making, the only way to transmit information successfully is with a recipe since it is impossible to describe the way a cake tastes. Yet with a recipe the components can be obtained, and the cake duplicated. With a color system of classification and components, exact duplicates of colors can be obtained, even transmitted over a wire as in Colorcode transactions between leading Paris and American fashion authorities. You can't transmit the flavor of a cake. Neither can you transmit the color of a fabric without a classification system and standardized nomenclature.

For years the Munsell System has been synonymous in this country with color classification. Munsell made his first color notation in 1905, giving number designations to the hues comprised so that they could be easily identified. However, the colors themselves, mixed by an arbitrary method of starting with a fairly bright commercial pigment and diluting it for the lighter shades with white and for the darker with black, are drab and muddy. Standard Munsell colors leave out many color variations that are commercially of use. On the other hand, the System classifies a plethora of colors so greyed as to be monotonous.

In recent years there has been a revival of interest in systemizing colors. The simplest systems are the best. Since many thousands of color variations are obtainable, no system can present them all without becoming so cumbersome as to defeat itself. Therefore, those commercial charts which show the most carefully selected colors suitable for any given use and those which arrange them in a manner that is logical and makes selection easy, are the ones that find most favor. It must be kept in mind that there are two kinds of color charts. One of these is the simple chart to help the amateur color user to make his selections. The other is the comprehensive commercial color system that tries to furnish a theoretical key for every color that exists.

* * *

The range of colors from green to blue are the passive, restful colors. The serenity of the sky, the restfulness of lawns and distant trees in leaf are echoed in the blue of a room. The range from red through orange to yellow are the active, stimulating colors. They symbolize action, ripeness, maturity. Each is enhanced by combination and contrast with harmonizing colors or with neutral greys, whites and blacks. You can put the psychological influence of color to work in decorating your home and your working surroundings, and in selecting fabrics for personal clothing. It cannot be too strongly stressed that in every instance of personal or business endeavor, the power of color can be rightly used for the desired reaction. *END*

HOW TO USE THE COLOR KEYBOARD

THE COLORS on the chart opposite have been given names instead of numerical and alphabetical designations because names are easier for the layman to remember and are more descriptive. The value* of each color is designated as 1 or 2. The chroma** has the alphabetical designations *A*, *B* and *C*. Thus, Magenta 1A will be the darker shade of magenta at its greatest chromatic intensity. Orange 2B will be a light shade of orange in a medium grey intensity.

The 72 colors shown have been chosen for the greatest commercial usability. They do not constitute a comprehensive color chart. The color steps are not in all cases equal. This is intentional because very often one intermediate is a great deal more usable than another in any given color and it was necessary where only 72 shades are shown to make some drastic eliminations. Thus, for example, the middle chroma of dark yellow should have been a mustard color but a lighter gold was chosen instead because it is a great deal more usable, mustard being difficult to combine with any considerable number of other colors.

The four sections are divided so that *hot* colors appear on two sections and *cold* on the other two. This makes color harmonies instantly and simply possible by merely holding two of the colored sections together. When this is done, it will be found that when a *hot* and a *cold* color sheet are used, the adjacent colors at top and bottom form blending harmonies whereas the middle colors are contrasting harmonies. Where the two *warm* or the two *cold* sheets are put together this way, the reverse is true. The colors in the center are the blending harmonies and the colors at the end contrasting. This is a quick and simple method for finding many unusual color combinations for any specific purpose. More subtle harmonies can be worked out by sliding the pages up and down in relation to each other.

*VALUE: By comparing any color with different greys of a scale from black to white, it is easy to distinguish the value of that color, which simply indicates how light or how dark that color is. A color near white in value is known as a high value color, whereas a dark color is said to have a low value.

**CHROMA: Refers to greyness or purity of a color. A greyed green, such as olive green, is a weak chroma of green, whereas an emerald green is a pure, strong variation of green.

THE CONSUMER

The millman, the converter, the apparel manufacturer, the retailer, the retail clerk . . . all throw at Mrs. Consumer words and phrases as selling blandishment . . . all assuming that she knows what they're talking about. Sadly enough, it's gibberish to her. And so writer Cora Carlyle gathers a group of typical

Q. I bought one of the new petticoats to wear under a very full skirt. It had a wide, stiffened band around the bottom to make it stand out. When the petticoat came back from the laundry, the stiffening had vanished. Can I renew the stiffness?

A. Yes, you can soak the band in a very stiff starch solution. Let it hang until almost dry without squeezing out any of the starch, and then iron it with a cloth between the petticoat and the iron. This precaution is to keep the starch from sticking to the iron. It will not be easy to do this; so if you prefer, you can instruct your laundry to do it for you.

Q. Why do some men's shirts have the words *no starch* in the back of the collar?

A. There may be several reasons for this:

1. Perhaps between the front and the back thickness of the collar there is an interlining of material which has been *fused* by the application of heat. This will stay in for the life of the collar so that it requires no further starching at any time.
2. It may be that the collar was designed to be soft. In such case, it would have been especially cut to drape softly, and starch would spoil its lines.
3. Perhaps the collar was woven in one piece by a special process so that it is very stiff without the necessity for any sizing to be added to keep the stiffness.
4. The shirt may be of rayon or some other man-made fiber in which case it is not customary to use starch in the collar.

Q. Recently I bought a skirt that is *fluted*. I like it because of its graceful lines; but to my dismay, after one dry-cleaning, the fluting was partially removed and the appearance was spoiled. Is there a remedy for this?

A. Proper finishing methods at your dry-cleaner's will restore a fluted garment to its original appearance. Fluting is a type of ornamentation in which the fullness in a fabric is arranged in even, rolled grooves instead of being pressed flat, as in pleating. Note these differences yourself. All good dry-cleaners have been especially instructed by the National Institute of Cleaning & Dyeing as to the proper methods to be used to restore fluting.

Special machines are available to cleaners to replace fluting in ruffles, flounces or blouse fronts which are popular today. Wider areas such as skirts must be re-fluted by hand. This is expensive and all dry-cleaners are not sufficiently adept at the task.

Q. Do slips cut on the bias fit better than those cut on the straight or the *up-and-down* of the material?

A. Slips made of material cut on the bias fit better and hang better. This is because the material, since it hangs on the diagonal, affords a spring and elasticity to adjust itself to the figure and to body movements. Care must be taken in making slips on the bias that the seams are not allowed to stretch when being stitched on the machine. One way to hold the seam lines in shape is to place a strip of Scotch tape over them and to stitch over this. The tape can then be easily removed.

Q. I have often seen advertisements about the use of the Tussah variety of silk for men's and women's apparel. Can you give me concise information as to what properties and uses this type of silk has and whether or not it is a good buy for apparel.

A. Spelled in several ways — Tussah, Talar and Tassui — this silk filament, from wild, uncultivated silkworms, is as old as true silk; it feeds on trees such as the oak, cherry and mulberry, as well as on the castor oil plant. Raised in China and India, the reeling of the cocoon is done by native farmers who gather the cocoons with the help of boys. Tussah is strong, irregular, and comes naturally in colors of tan, ecru and brown. The percentage in boil-off is about 11 percent compared with about 25 percent in cultivated silk. Tussah has several outstanding characteristics which make it ideal for use in garments — resiliency, strength, crispness, ability to withstand abrasion in wear and good manipulative properties. Some of the well known dress goods fabrics made from Tussah silk are shantung, rajah, pongee and nankeen (or nankin).

In issue No. 15 of AMERICAN FABRICS, Autumn 1950, we ran a rather complete story on the origin and properties of Tussah.

Q. Do the detergents one sees in advertisements affect fabric strength and the hand of the goods?

A. Yes, and no; this depends on the detergent used, as well as the fabric. Alkaline detergents, for example, change the hand or feel, the elasticity and the strength of acetate fabrics. They are likely to have rather harmful effects on woolen goods. Wool has a high attraction for many synthetic detergents, and the feel of the fabric would definitely be affected by a heavy deposit of detergent. If possible, use a pure soap when washing woolen garments.

Q. I was much interested in your Consumer Page of the last issue with regard to chlorine bleaches. My own practice has been to use chlorine bleaches in laundering white cotton garments, bath towels, and kitchen towels. I have always been prejudiced against using such bleaches in washing white silk, rayon or nylon garments. I would like to ask if there is any logic to such a practice, or is it sheer prejudice?

A. Your practice in not using chlorine bleaches when laundering white silk, rayon or nylon is logical. Both white rayon and nylon fabrics tend to remain white because of their nature. White silk is yellowed by chlorine bleaches so that it is wise to use a bleach with a peroxide base.

WANTS TO KNOW...

Mrs. Consumers from time to time . . . asks them what they'd like clarified in textile terms . . . and then fires the questions at Dr. George Linton. Here is another batch. The moral is: Just because you know what you mean, don't take it for granted that the other person does.

Q. Recently I attended a textile conference and one of the speakers dealt with some proposed changes in standards for American and Egyptian cottons. Not being an out-and-out cotton man I did not want to ask for a full explanation from the floor during the Question and Answer period. Possibly you might enlighten me as to these changes.

A. There is much entailed in the proposed changes. The Department of Agriculture will invoke a new standard system on August 1st, 1952. The standards now used are for the Pima type cotton (Pima County, Arizona and adjacent areas) and for the SXP type (Sakellaridis, originally an Egyptian cotton, and Pima). Present standards for these two types have been in vogue since March, 1940. A recent survey showed that the production of cotton as represented by Pima standards has long since ceased. SXP, because of changing conditions and other factors, is now being replaced by two very popular, high quality strains known as Pima 32 and Amsak (American-Sakellaridis strain). The new set-up in standards has been approved by a group of cotton producers, merchants and representative textile plants. Watch the newspapers for further developments as to methods, characteristics, staples.

Q. Is upholstery fabric immune to fading from sunlight and are there fabrics on the market guaranteed against this fading or loss of color within a reasonable time?

A. There are fabrics to be bought today for upholstery purposes which are immune to fading and are colorfast. There is, however, a wide range and a great price variance in upholstery materials. The better qualities will resist fading and remain colorfast for the life of the fabric. It is suggested that you go over the items very carefully with your retail dealer before making a purchase, for guarantees of particular materials of your choice.

Q. I am a graduate of a textile college which gives courses for women in textile testing, fabric construction, color, etc. I am desirous of obtaining a post with the Government in my chosen field. Can you furnish me with the address as to where I might apply?

A. There is the National Bureau of Standards, a unit of the Department of Commerce. Write to Dr. William Appel, the Director of this Bureau, Washington 25, D. C.

Q. Is there a textile college that grants a Ph. D. degree; and if so, to whom should I write? I hold a B.S. in Education and an M.S. in Retailing and want to continue my education in textiles.

A. It is doubtful that you could qualify for the Ph. D. degree since a B.S. in Education covers a very broad field and an M.S. in Retailing is not closely akin to the same degree granted by a textile college. Selected textile students from schools that major in textiles, and holders of degrees such at B.T.E., B.T.S., and M.S. from these institutions, may study for the higher degree in The Institute of Textile Technology, Charlottesville, Va., Textile Research Institute of New Jersey, Princeton, N. J., and Massachusetts Institute of Technology, Cambridge, Mass. Your textile background may be considered too meager for a Ph. D. degree in the field of textiles.

Q. Why is acetate rayon so popular for linings?

A. There are several reasons. Its absorptive quality is adequate for wear; it is resistant to mildew; it dyes easily and well; the price is moderate; and chiefly, the fabric presents a smooth, lustrous surface which is appealing and makes for ease in putting on and taking off a garment.

Q. I have just bought my young daughter a woolen dress. The material is so very soft that I wonder if it is all-wool. Although the label says it is all-wool, can I trust this?

A. We have, of course, no way of analyzing the fabric, but you should have faith in the label because of the penalties attached to violators of the Wool Products Labeling Act, passed in 1939. Among other things, this act provides for punishment of manufacturers who label goods *all-wool* when they are, in fact, only part wool.

Q. I have taken up sewing, and have learned that I should, when cutting patterns, be sure that the up-and-down of the goods runs vertically in relation to the finished garment. Please tell me why this is necessary.

A. The *up-and-down* you refer to is known as the warp and the filling. The former is vertical and the latter is crosswise in direction. When the goods are woven, the warp is under tension in the loom while the filling or crosswise yarns are more or less loosely placed into the fabric. The filling comes off the bobbin in the shuttle under no tension to speak of. Therefore, in order to obtain the proper drape and take advantage of the fabric strength, you would, as you say, cut the goods in an *up-and-down* manner.

Q. I am fond of wearing sweaters but find that many of them, after wear and washing, are covered with little balls or pills of fuzz on the surface. What causes this, and is it possible to tell if this condition will occur before I buy a sweater?

A. The chief reason for *pilling*, as it is called in the trade, is that the yarn was spun loosely and given a low twist so that the final result would be a soft, fluffy, napped effect. Then, during wearing and washing, the short fibers tend to pull out of the loose twist. It is impossible to determine in advance if this pilling will occur after wearing the garment. One thing, however, that you can and should do to improve the appearance of a sweater after washing is to brush the surface lightly in one direction with a soft brush while the sweater is drying.

My heart's desire; to be
A wandering priest
Whose home is anywhere.
I lean upon the Wind of Spring
For true appreciation.
All my life I await,
Uncompanioned,
The Edges of the World.

LU YU

The Philosophy of the King

"The ancient kings who wished to make their people happy first put their states in order. Since they wished to put their states in order, they first made their own families perfectly happy. To make their own families happy, they controlled themselves. Wishing to control themselves, they first purified their hearts. Wishing to purify their hearts, they tried to think rightly. Wishing to think rightly, they learned all that they could learn. One learns by finding out the truth about things. When they had found out the truth, their learning was complete. Their learning being complete, they were able to think rightly. When they were able to think rightly, they were able to purify their hearts. Their hearts being pure, they could control themselves. When they were able to control themselves, they found they could make their own families happy and harmonious. Once they had made their families happy and harmonious, they were able to put their states in order. Their states being in order, the whole kingdom was happy and peaceful. From the inhabitants of heaven down to the multitudes of the people self-control is the root of all things. When the root is cared for, that which springs from it must be right." — CONFUCIUS.

The Philosophy of the Poor

Chuang Tze's family being poor, he went to borrow some corn from the prince of Chien-ho.

"Yes," said the prince. "I am just about collecting the revenue of my fief, and will then lend you three hundred ounces of silver. Will that do?"

At this Chuang Tze flushed with anger and said, "Yesterday, as I was coming along, I heard a voice calling me. I looked round, and in the cart-rut I saw a stickleback.

" 'And what do you want, stickleback?' said I.

" 'I am a denizen of the eastern ocean,' replied the stickleback. 'Pray, sir, a pint of water to save my life.'

" 'Yes,' said I, 'I am just going south to visit the princes of Wu and Yueh. I will bring you some from the west river. Will that do?'

"At this the stickleback flushed with anger and said, 'I am out of my element. I have nowhere to go. A pint of water would save me. But to talk to me like this, — you might as well put me in a dried-fish shop at once.' " TAOIST SCRIPTURES

The Philosophy of the Artist

Hidari Jingoro, a great sculptor and architect, lived in the seventeenth century in Fushimi, near Kyoto, and was called Hidari on account of his being left-handed. He was a man of simple character, and lived from hand to mouth. He would not work unless compelled to do so from the want of common necessaries. Once he fell in love with a lady, but was too poor even to pay respects to her. One day, nevertheless, when walking along a street he met the object of his love and immediately followed her. The lady dropped her mirror by chance, which she kept between the folds of her sash. Jingoro picked it up and hastened home. He at once began to carve her image, and when it was done he put the mirror in the sash worn by the image and lo! the image began to move, talk with the sculptor and even confided her love to him.

* * *

Thus it was said that Hidari Jingoro's art had the power to bring to life even what was inanimate. JAPANESE TALE

A hen, when at rest, produceth much fruit;
A peacock, when it remaineth still, hath a handsome tail;
A gentle horse hath a swift pace;
The quiescence of a holy man is the sign of his being a sage.

THE ELEGANT SAYINGS OF THE LAMAS

AMERICAN DESIGNER,

CAROLYN SCHNURER

MAKES NEW AND UNIQUE CONTRIBUTIONS
TO THE AMERICAN FABRIC AND FASHION INDUSTRY.
THIS IS THE STORY OF THE INSPIRED COOPERATION OF A DESIGNER, A MUSEUM, AN AIRLINE, A GROUP OF FABRIC MANUFACTURERS, A FABRIC FINISHER AND A RETAILER . . . THE FRUITS OF WHICH WILL BE BROUGHT TO THE AMERICAN CONSUMER DURING THE COMING YEAR.

SEE THE FOLLOWING PAGES

CAROLYN SCHNURER'S FLIGHT-TO-JAPAN . . . by CORA CARLYLE

The levels of art in any given country run the gamut from its cheapest knicknacks to its highest expression in sculpture and painting. What a person extracts from a country's culture generally depends very much on what he brings to it. Let us take the example of Japan! For the most part we in America have been exposed to feeble imitations of the real thing. We've been treated to pottery, sculpture, drawings and engravings that lack all the life, subtlety and the special quality of authentic Japanese art. What has contributed in some measure to this has been the physical and spiritual insularity of the Japanese themselves. Perhaps it is only today that we are at the beginning of a new era when an inter-cultural and inter-economic relationship is not only possible but mutually profitable. Perhaps it is only today that both countries have achieved an orientation that could have come about solely by time, by strife, by sheer necessity.

* * *

It is possible to borrow from a culture (and where indeed is there an artist or artisan who has not recruited from many sources to enrich his own expression?) and integrate that stimulus to produce a fresh form. The validity of that borrowing depends upon taking from organic form and thus avoiding surface adaptation. What is especially important about taking from Japanese culture is to do so with due regard to what lends itself to the requirements and customs of our western culture. We believe that Miss Carolyn Schnurer, counseled and encouraged by Michelle Murphy of the Brooklyn Museum, has achieved a successful integration of Japanese influence into her designs for American women.

Carolyn Schnurer's *Flight-to-Japan* was the fifth in an annual series of programs instituted by Mr. A. Wells Peck, President of Peck & Peck, to promote international good will and understanding, and to bring the peoples of two countries together through the medium of fashion.

In this promotion we have a fascinating

(continued on page 122)

B.O.A.C. photo shows Carolyn being greeted on her arrival in Tokyo. Fashion photos by Jane Arnold.

NOTE: In preparing the material for this article, the writer was struck by the careful planning and in many ways the unselfish cooperation of such diversified organizations as the Brooklyn Museum, the B.O.A.C., the fabric and finishing houses and Peck & Peck in bringing to Carolyn Schnurer their resources. It is an interesting instance of the importance of enthusiasm in producing a good result. To make a loaf of bread requires a combination of a given number of ingredients, and here is an example of what goes into achieving new designs for the American consumer.—C.C.

Carolyn Schnurer saw an interesting knot on a small purse (and the Japanese specialize in interesting knots) and it inspired the breast line detail above.

The pocket details of this bathing suit were also inspired by the architecture of the pagoda. The upward swing lends a distinctive fillip to the garment.

No ordinary object in Japanese life escaped the eye of Carolyn Schnurer who designed the scalloped edge of this bathing suit from the parasol border.

The pagoda which looks upward to Buddha gives Carolyn Schnurer inspiration for both the shoulder line of the coat and the detail of the shorts.

The source of inspiration for this cotton embroidered broadcloth was the lid of a Japanese box.

The Japanese love of nature is revealed over and over again in the repeated use of flower and leaf motifs. The tender bamboo leaf so closely identified with things Japanese served as inspiration for this print on the Everglaze fabric by Arthur Beir and Company.

This charming silhouette is an almost literal translation of the curves of a Japanese lantern. Carolyn Schnurer treats the skirt rather lavishly and contrasts this with the utter simplicity of the bodice. The fabric is cotton brocade by Wamsutta in Everglaze.

This Wamsutta-Everglaze brocade cotton has the luxury feel of silk and the clean practicality of cotton.

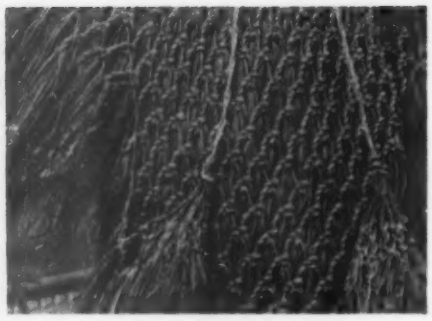
LEFT: *The silhouette was inspired by the crossties of the kimono, and the fabric by Donato's duck (see page 122).* CENTER: *Another version of the crossties of the kimono. An interesting detail is the padded hem also kimono-inspired.* RIGHT: *This beautiful silk was inspired by a decorative paper with a medallion design. Note the modified kimono sleeve.*

Japanese paper with a maple leaf motif inspired the design for the fabric. Here Carolyn Schnurer brings her modified kimono sleeve to a beach coat.

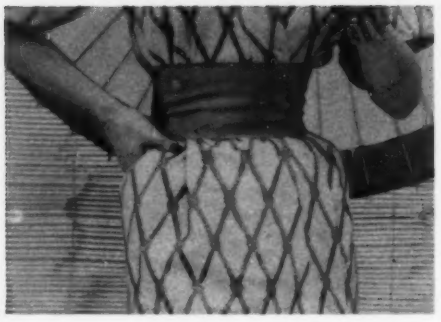
WHISPER

this Secret of Love!

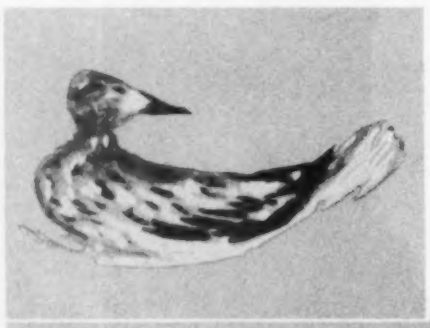
To the Japanese, the back of a woman's neck is regarded as one of her charms. No wonder that Japanese fashions have frequently dramatized the boat neck. Carolyn has taken this neckline and adapted it in the American fashion.



STRUCK BY THE *fascinating weave, Carolyn Schnurer bought a farmer's raincoat. When she examined the intricately tied knots, she conceived a pattern which was translated into an original embroidered fabric.*



THE OBI WHICH *is the elaborately tied sash of the kimono is beautifully adapted for use here and should find strong favor with the gals who wish to show off their small waistlines. How the obi is tied reveals a good deal to the Japanese, for from it can be seen whether the wearer is a geisha girl and whether she is married.*



WHEN CAROLYN *met the Japanese artist Donato, and asked for his signature in her diary, he responded with typical Japanese subtlety and graciousness. He drew a duck which he felt was his true signature. This duck served as inspiration for her fabric.*

Michelle Murphy, Research Consultant of The Brooklyn Museum whose influence was a major factor in the success of the project.

(continued from page 116)

chain of events stemming from an extremely worthwhile cause. We see the designer receiving from her trip great stimulation and conviction of the contribution of design ideas which Japan offers. She translates these and new developments occur in fabric groups; beautiful clothes will be brought to the consumer through retail stores; and a mutual interest through the medium of fashion is being developed by two countries.

An interesting and significant sidelight that has simultaneously developed is the establishment of two fellowship awards . . . one for an American student to study in Japan for one year, the second for a Japanese student to study at Rhode Island School of Design for a similar period. Mr. W. R. MacIntyre of Jos. Bancroft & Sons Co. is giving these fellowships, and the presentation of the two awards which took place at the Brooklyn Museum in mid-December is a milestone for the textile and fashion industries. To Carolyn Schnurer, to Michelle Murphy, to Mr. A. Wells Peck, and to Mr. W. R. MacIntyre: we salute you for the breadth of your thinking, for the good-will you manifest . . . for a job very well-done!

— CORA CARLYLE

FIVE YEARS OF TEXTILE HIGHLIGHTS

1947 — 1951

To keep AMERICAN FABRICS readers abreast of developments in the textile world, Textile Editor George E. Linton has compiled a group of items of interest covering the last five years. These selected notes, ranging over the broad field of textiles, should be of interest to those who may like to review the progression of events.

1947: The splurge of Tom Jordan and his corner of the cotton market which extended from October of 1946 to January 3 came to an end. A three-point program was initiated by the cotton exchanges in New York, New Orleans and Chicago to prevent price upheavals in the market. The program dealt with credits to trade accounts, margins for speculative accounts and an agency to supervise activities of Exchange members.

Announcement was made of Masslin, a non-woven fabric made from a blend of cotton and rayon fibers by a method that does away with spinning and weaving.

398,000 looms were set up in this country, with a loom operation total of 486 million hours.

The new artificial fiber, Sarelon, made from protein fiber, was announced by the Southern Regional Laboratory of the Dept. of Agriculture. Peanuts serve as the base for the new fiber.

Vinyon N, basically different from other vinyl materials, and made from a white, powdery resin which results from copolymerization of vinyl chloride and acrylonitrile, was announced by Union Carbide & Carbon Corp.

The new high-speed section beam warper made by Fontana-Lagano, Italy, was becoming popular because of its practicability.

Lyons and Ste. Etienne, France, known for their fine silks for many centuries, now give considerable attention to fine denier, continuous filament acetate rayon.

The British Government will again requisition all wool raised in the United Kingdom except that raised in the Orkney, Shetland and Outer Hebrides Islands.

The Australian Government, still adamant over supplying wool for the Japanese woolen industry, permitted only sales of the lowest grades to the Japanese.

In June, the 117-year-old, three-million-dollar plant of Thomas Oakes & Co., Inc., was sold at auction. Located in Bloomfield, N. J., the plant for many years was a leader in making fabric for the armed forces and high grade coating for the civilian trade.

Japan shipped its first cotton grey goods since the close of the war. 32 million yards went to England, while Australia received 12 million yards.

The curb on the textile industry was lifted in Germany; U. S. cotton producers are to allow the mills to sell finished goods where they wish.

President Truman lifted the cotton ban to allow the importation or withdrawal from warehouses of an additional 23 million pounds of long staple cotton during the quota year ending September, 1947.

Pacific Mills announced *Pacific*, a process for making wool fabrics washable.

In July, Avondale Mills announced a new product, Plastavon, a non-woven fabric made from cotton taken raw from the bale, bleached, dyed or tinted as desired, and bonded with synthetic resins, which in effect spot-weld the cotton fibers into a uniform sheet. To be used as throw-away napkins, that is, napkins to be discarded after single use.

The 80th Congress passed the bill which directed the Commodity Credit Corporation to continue price support for domestic wool in keeping with the 1946 support price until December 31, 1948.

Burlington Mills Corporation, in expansion move, will distribute more goods to the women's wear field. This is to include broad goods, lingerie, blouse and kindred fabrics.

The Men's Fashion Guild of New York launched a campaign for wider consumer demand for lighter weight fabrics aiming towards more comfort in men's apparel.

Japan will soon begin rebuilding its woolen industry; mills will soon be able to handle about 650,000 bales of wool annually. They will buy U. S. and Australian wool clips.

Continued liquidation of American wool growing industry is resulting from increasing attention given to lower-cost wool imports. Eugene Ackerman, Executive Director of the American Wool Conference, cited the fact that there had been a decline of about 40% in wool in this country since 1942.

In September, British woolens averaged about 50% higher in price than a year ago . . . becoming practically prohibitive in price for the American trade.

Dan River Mills began production of several cotton fabrics treated with a new and exclusive chemical process which renders them as wrinkle-resistant as woolens or worsteds. The process uses as its base *Resloom C*, a synthetic resin made by Monsanto Chemical Company.

The silk of Japan was transferred to the Government by the Supreme Allied Headquarters under direction of General MacArthur. Japanese silk has been *frozen* since September 1st, 1945. Japan has about 100,000 bales of raw silk and about 100 million yards of silk fabrics on hand.

Raw silk production in Japan rose from 2000 bales in January 1946 to about 10,000 bales monthly during first half of 1947. Fabric production increased to about four million yards monthly, from a production of about two million yards a month the preceding year. Pre-war figures were 60,000 bales of raw silk a month and about 40 million yards of fabric on a monthly basis.

The International Silk Guild established temporary offices at 292 Madison Ave., New York City — END OF 1947.

1948: Burlington Foundation made available $50,000 to the Home Economics Foundation of Women's College, and $15,000 to Engineering Foundation at State College, Greensboro and Raleigh, North

Carolina, respectively. This brings total grants to one quarter million dollars.

The cotton belt of Arizona, California, New Mexico and the Rio Grande valley of Texas, all irrigated land, showed rapid growth. California expects an average return of 1.28 bales per acre as compared with the Southern average of about .5 bale per acre. California hopes to harvest one million bales in 1949.

A survey of Japanese textiles revealed the following: Machinery in operation, power facilities working, labor situation improving and raw material sources functioning. It will, however, take years for the Japanese to match the level of the middle 1930's. The old-time very low wages are obsolete and outlawed. Rayon plants are either destroyed or outmoded.

Nastrofil Co., Milan, Italy, introduced a frame which spins cotton yarns directly from the drawn sliver. Claims are made for improved strength and less fuzzy appearance, with drafts as high as 200 to 250. Constant ballooning is maintained by movable spindle support. The single side of the frame has 192 spindles, and the ring diameter is two inches. Labor savings are supposed to be as much as 50 percent; reduction in maintenance 30 percent; reduction in power amounts to 20 percent, with about 10 percent increase in production.

In February, Tennessee Eastmann Corp., announced that it will discontinue use of the word *rayon* for its cellulose acetate fibers and yarns. It claimed there is wide divergence between viscose rayon and cellulose acetate rayon.

Domestic production of rayon for 1947 exceeded 975 million pounds, and represents about 48 percent of world production.

Textiles became the second largest industry in America. It has 750,000 electric motors located in 6,203 establishments which employ about 1¼ million people who receive about 1⅓ billions in salaries and wages per annum.

Statistics for the Apparel Industry reveal that there are over one million workers whose earnings total 1⅔ billion dollars per year. These workers produce about nine billion dollars' worth of clothing. New York State produces more than one-half the apparel for the nation, employs more than 40% of the workers, and pays about one-half of the total salaries and wages.

Woolen and worsted woven cloth production for 1947 was about 500 million linear yards, about 17 percent under 1946 production.

American Cyanamid Company announced production of Aerotex Softener *H* for reduction in static on nylon and Vinyon yarns and fabrics.

Representatives of all branches of the textile industry opposed any change in standard atmospheric condition for testing textiles from 65% Relative Humidity and 70°F. This was the result of a meeting held with Federal Specification Board Technical Committee, Washington, D. C.

The Taftville, Conn., plant of Virginia-Carolina Chemical Corporation, successor to Aralac, is to produce Vicara in 1½ and 4 denier sizes in all standard staple lengths. It is claimed the fiber is extremely practical and adaptable in blends with other fibers.

Joseph Bancroft and Sons, Wilmington, Del., announced production of Everglaze finish on spun rayon, and on mixtures of cotton and rayon.

For 1947, average consumer consumption of cotton was 27 pounds; rayon, 6.3 pounds; wool, 4.9 pounds.

Sub-Committee of American Society for Testing Materials was to vote by letter ballot on the proposed new definition of *rayon*.

In April completed data presented on the production of cotton broad woven goods in this country during last quarter of 1947 showed that 2577 million linear yards were made, a 9 percent increase above 1946.

Tests conducted at the University of Minnesota indicated that flax straw can be converted into linen yarn in four hours by a chemical process which removes gums and other waste materials. The fiber is supposed to be suitable for toweling, sheeting and shirting.

The descriptive name *Saran* was announced by the Dow Chemical Co. The term *Saran* applies to a series of thermoplastic resins chemically known as vinylidene chloride copolymers, originally developed by the Dow Company in the late thirties and known especially for their resistance to a wide range of chemicals.

In July it was announced that cotton cultivation was about 10% over 1947. California and New Mexico showed increases of 51% and 37%, respectively.

Tennessee Eastman Corporation adopted the word *Estron*. This term will identify its cellulose ester textile yarns and staple.

Burlington Mills, organized in 1923, now has an organization of 25,000 people and 75 plants.

On the 7th of August it was announced by the International Cotton Advisory Committee of the Dept. of Agriculture that the 1947-48 cotton year ending on August 1st, showed a world approximation of 43 million bales.

A cotton crop of 15,169,000 bales was forecast by the Dept. of Agriculture on August 9th. This is about 3,300,000 bales more than the 1947 crop and 3,200,000 more than the 1946-47 average.

Mandatory labeling of rayon suitings was being sought by the manufacturers of wool fabrics and garments. The claim was made that consumers often confuse the advertising of rayon suitings which use the term *worsted types*. The wool industry claimed that the distinction is not sufficiently clear to the layman. Under the Wool Labeling Act of 1939, labels on woolens must specify actual wool content and type, while the rayon manufacturers mark their products only in compliance with a set of fair trade practice rules specified by the Federal Trade Commission. Manufacturers of rayon suitings have countered the move of the wool industry with a reminder that the manufacturers of better type clothing already label their rayon clothing as 100% rayon and emphasize the word *rayon* in advertising.

The woolen industry has lost 34,000 looms in 28 years, but fabric production has increased about 25%.

Brazil is making rapid progress in sericulture and it is prophesied that this country may lead the world in silk production within the next few years. 2,000 Italian machines used are said to be capable of turning out 140 million kilos of cocoons annually. Several types of machines are used to strip the leaves from the branches of mulberry trees, distribute them and dispose of the unused leaves and the larvae. It is also possible to unravel 5 to 10 kilos of cocoons at a time. Brazil hopes to be able to put the silk industry on a basis where it can compete with rayon and acetate rayon.

The Linen Industry Research Association formulated new plans to increase work in bleaching, dyeing and finishing. Other research problems will include retting various types of straw, improving efficiency of fiber extraction by turbine scutching machines, leveling-off of rayon staple yarns spun on flax machinery, development of crease-resistant finishes.

A pilot model Knitting Loom was being developed in the School of Textiles, N. C. State College, Raleigh, N. C. Features of the machine include a pattern control system and greater simplicity in operation and maintenance.

Cranston Print Works in Rhode Island introduced a double printing method which will give the effect of tropical worsteds and

heavy tweeds on popular priced cottons. Materials are washable, vat-dyed and Sanforized.

Du Pont Orlon, previously called Fiber A, was now in pilot plant production. Yarn and fabric can be dyed with acetate, basic and some vat dyes. Technically, the fiber is a polyacrylonitrile development. Resistant to rays of the sun, it can be used for automobile tops, awnings and other outdoor purposes. It can withstand high temperatures. The fabric has a *warm hand* and suppleness. The development of this fiber began eight years ago.

Champlain Spinners, Whitehall, N. Y., and Burson Knitting Company, Rockford, Illinois, supplied the first garnetted nylon fiber and ribbed hosiery from spun nylon yarn, respectively.

November brought news that construction of a plant to make Orlon fiber will get under way in March, 1949, in Camden, S. C. This latest Du Pont plant will be completed in about a year.

* * *

The Cotton Board Conference of Great Britain reported that over 400 million dollars will be spent during the next decade to re-equip the cotton industry. The Government will contribute, up to 25%, amounts of money necessary to modernize and to bolster the spinning phases of the industry.

New England Textile Foundation had to date contributed $245,000 to the four textile institutes and schools in New England: Lowell, Fall River, New Bedford and Rhode Island.

Monocord is the new non-twisted sewing thread of Belding Heminway-Corticelli Company. The thread is produced by welding a number of parallel fibers at one point. The absence of spirals or ridges will admit of improved sewing results. The first thread of Nylon is known as *Nymo*.

The per capita consumption of cotton, year ending July 31, 1948, dropped from 33.8 to 31.2 pounds. Rayon per capita consumption increased one pound to 7.3 pounds.

Dr. Claudius Murchison, at the annual meeting of the Cotton Textile Institute in New York, attributed the export drop to 50% of last year's total of 1½ billion yards to the restrictive action of other nations because of dollar shortage.

It was estimated that about 35% of the machinery formerly used in Ireland to spin and weave linen was now used in the manufacture of rayon materials. There is now a drop of over 50% in linen fabric production as compared with 1937 production.

Last month in 1948, December, brought out the following items of interest: Tennessee Eastman Co. was using an electronically driven tricot warper said to be able to produce a firm, uniform, compactly filled warp beam.

Industrial Rayon Corporation had consummated plans for a 1200-acre site in Point Pleasant, Virginia, for a new plant.

Committee had been organized to raise funds for the perpetuation of the famous old Slater Mill in Pawtucket, R. I. This was the first cotton mill to be operated in this country.—END OF 1948.

1949: January opened with the Industrial Rayon Corporation's announcement of its continuous process for viscose spinning.

Opening of the Design Center in London. Financed by industry and government subsidy, this library of textile design and reference collection is available to designers, buyers, etc.

Rayon production for the year 1948 totaled 1¼ billion pounds of filament yarn and staple. This is about one half of the world production and an increase of 15% over 1947. Non-cellulose base manufactured yarns provided an additional 67 million pounds.

Wool boards in South Africa, Australia, and New Zealand, the International Wool Secretariat, and the American Wool Council merged to form The Wool Bureau, Inc., aimed at fostering the wool industry.

General Motors divisions contemplated using more than 10 million linear yards of interior upholstery fabric and approximately 1½ million yards of top material and interior linings for convertibles. Ford Motor Co. will use about 40 million dollars' worth of textile materials.

Sanforized Division of Cluett, Peabody Co., Inc., began promotion and licensing of their new shrink-resistant process, Sanforlan. To be used on woolens, the process is of the wet-chlorination type, originally brought out by Wolsey, Ltd., and Stevenson of England.

In February, the Fiber Division of the Virginia-Carolina Chemical Corp. emphasized the use of Vicara, the new zein protein fiber, in blending with wool, cotton and rayon.

Burlington Mills, Inc., opened their new three-million-dollar plant, Wake Finishing Co., near Raleigh, N. C. The dyeing and finishing of acetate rayon, rayon, and wool and rayon blends will be done in the plant.

March opened with announcement that Japanese rayon production for 1949 would total 74 million pounds of filament yarn and 54 million pounds of staple; 60% of goods made to be exported.

A Lancashire, Eng. firm was building a heavy cotton loom with a length and width of twenty feet and a height of nine feet. Fabric twelve feet wide and ten times heavier than that turned out by ordinary looms was being produced on looms of this type.

The protein fiber Vicara was now being sold in staple form for 83.2 cents per pound, reduced from one dollar per pound. It was now available in two, three and four denier, in lengths up to six inches.

Celanese Corporation of America opened its new six-million-dollar plant in Mexico to produce viscose continuous filament yarn and staple.

Draper Corporation, Hopedale, Mass., was now shipping about one-third more looms compared with shipments made in 1948.

In August, Triangle Finishing Corp., Johnstown, N. Y., announced its *Trianized* process which produces a shrinkage under two percent in both length and width. Color uniformity is also improved.

Worsted Division, Pacific Mills, announced its new stabilized shrinkage process for women's wear geared for protection against dry or wet cleaning rather than washing. Improved stain and wrinkle resistance are also features. At present, the process is used to considerable advantage on gabardines and crepes. The name of the process is *Set*, derived from the three words, *Scientifically Engineered and Treated*.

Forstmann Woolen Company, in conjunction with the Newport News Shipbuilding Company, developed a card which gives higher production, smaller loss of stock and improved timing.

In October, the International Cotton Advisory Committee predicted a world increase in the cotton crop for this year of as much as one million bales.

The American Cotton Manufacturers Institute is the new name for the combination of the American Cotton Manufacturers Association and the Cotton Textile Institute. The National Cotton Council will take over the operation of the industry's cotton promotion. Dues are to be collected at the rate of about 1½ cents per spindle.

Deliveries of rayon yarn for this month were the greatest for any single month in the rayon industry, 100,200,000 pounds.

On October 25, SCAP terminated floor prices for Japanese

exports, including all textiles except raw silk. Floor prices on raw silk will remain until the end of this year.

Dynel is new name for an acrylonotrile-vinyl chloride staple, a product of Union Carbide and Carbon Chemical Corporation.

The Federal Trade Commission held that the Wool Labeling Act was not violated in the case of part-wool blankets where all precautions were taken to see that the fiber content was as listed on the label. The decision indicated that reasonable tolerances will be recognized.

The U. S. Bureau of Agricultural Economics and The Commonwealth Economic Committee presented the following interesting and concise statistics on estimated sheep population and apparel wool production for the world and for the major producing nations, 1948-49 and 1949-50. Carpet wools are included in the figures and *n.a.* means that exact figures are not available.

	Sheep Numbers Millions		Wool Production Millions of Pounds	
	1948-49	1949-50	1948-49	1949-50
World	714.9	720.1	3,020	n.a.
Australia	102.3	108.5	1,065	n.a.
New Zealand	32.5	n.a.	335	335
South Africa	33.0	n.a.	210	210
Argentina	53.5	49.5	419	418
Uruguay	22.0	22.0	150	150

The last month of the year, December, witnessed the following items of interest: The first established cotton mill in this country, the Old Slater Mill in Pawtucket, R. I., had been repaired and painted so that the project of improving the building as a textile museum might proceed further. Built in 1793, the building will house 15 pieces of textile equipment which can be put into operation.

The cotton crop for this year was estimated at better than 16 million bales, exceeding that of 1948 by more than one million bales. The crop will be, according to estimates, about the sixth largest ever raised in this country.

It was estimated that women in this country pay an average of about $28 a year for coats and suits. This was $8 more than in 1939.

The Wool Bureau, Inc., presented some interesting figures for the cost of a man's $50 woolen suit, two-piece type. Clean wool fiber content is 10.9%; making of the fabric, 16.9%; manufacturing of the suit, 32.2%; retail distribution, 40%. The fabric presented was a 13-14 ounce-per-yard material. Wool top was 62s-64s; yards of fabric needed, 3.3 yards — END OF 1949.

1950: The net civilian per capita consumption of cotton, wool, and the man-made fibers in this country averaged 27.6 pounds in the years 1922-40, inclusive. In 1932 a low of 21.1 pounds was recorded while the high was 32.9 pounds in 1937. Rayon Organon reported that the war years of 1941-45 had a high level of 32.4 pounds, an increase of about 17 percent. The years 1946-49 averaged 38.0 pounds; 1949 averaged 32.7 pounds.

In May, The Textile Institute Council of Great Britain approved the new tentative definition of rayon as *regenerated fiber wholly or mainly of cellulose origin.* The term would include viscose, cuprammonium, acetate and other cellulose ester and ester fibers.

The combined production of the four major textile fibers — cotton, rayon, wool and silk — amounted to more than 19 billion pounds for 1949, 8% above the 1948 figures. In these figures cotton accounted for 74%, rayon 14% and wool, 12%. Silk, although a major fiber, is still small with regard to world production because of the late war.

American Viscose Corporation announced its new *Avisco 15,* a dull crimped staple fiber for use in rugs and carpets, in a 15-denier size.

Princeton Worsted Mills made fabric of Fiber V synthetic yarn, sold in men's wear suitings by Witty Bros., New York, at $75 per garment. The fabric is cool to the wearer, light in weight, porous, resistant to wrinkling, and crease-retaining. Fiber V is a product of E. I. Du Pont de Nemours & Co.

In July, the Allied Chemical & Dye Corporation announced a new acrylic fiber made up of 85% acrylonitrile and 15% acrylamide.

Nylon sheets and pillow cases appeared in the market.

The Census Bureau revealed that cuttings for men's apparel for the first 17 weeks through April, 1950, show an increase of about 33% in the use of rayon and nylon over the corresponding weeks of the preceding year.

October brought announcement that Chemstrand Corporation, a company sponsored by American Viscose Corporation and Monsanto Chemical Co., will erect a plant in Decatur, Alabama, to manufacture Chemstrand acrylic fiber.

The United Kingdom announced a tax of 9/10 of a penny per 100 pounds of wool consumed, to supplement voluntary support for scientific research.

Chemifiber is the new name adopted by the Carpet Institute for the man-made carpet yarn trade.

In November, it was announced that the 1950 expenditures for the textile industry would be about 565 millions of dollars. This exceeded all previous years in expenditures.

Fiber E, Du Pont product, in continuous filament production, will be used for plush materials. The fiber shows high shrinkage with caustic treatment, which affords good compactness and high covering power.

The last month of the year was highlighted by the Monsanto Chemical Company's announcement that Dr. Nickerson, of their Research Laboratory, had found in studies of warp sizing that gelatine and styrene-base resin sizes act as an adhesive between the filaments of rayon yarns, and not as a protective sheath around the single yarns.

U. S. broad woven silk fabric made this year will be around 25 million yards; in 1937 it was 128 million.—END OF 1950.

1951: January figures released by the Bureau of Agricultural Economics for the year 1950 gave the following terminal uses of nylon and rayon fabrics for the automotive industry: 85 million pounds of textiles for the interiors of closed passenger cars; rayon and nylon accounted for 16 million pounds, wool and mohair for 39 million, and cotton for 30 million pounds.

Over 24 million acres will be planted with cotton this year in the United States, compared with about 18½ million for the year 1950.

The sheep population in this country in 1941 was 47,441,000. At the beginning of 1951 there were only 28,065,000 sheep in the U. S., a decline of 41 percent. Because of the loss, domestic supplies of wool met only 26% of mill demands in this country as against 61% of the demands of ten years ago.

Rayon production for 1950 was slightly over 1¼ billion pounds, an increase of 27% over 1949. The world production was 3½ billion pounds.

The wool yield for 1950 in this country was 220 million pounds of shorn wool and 32 million pounds of pulled wool. The average

price was 57.3 cents per pound for the shorn wool and 38.5 cents per pound for pulled wool. These prices were the second highest on record and were exceeded only by the 1918 prices. Shorn sheep and lambs exceeded 27 million, a slight increase over 1949 and the first increase since 1942. Shorn fleece weight averaged 8.04 pounds, while pulled wool fleece weight was 3.49 pounds per skin.

In March the National Cotton Council survey showed that American extra-long cotton staple varieties equalled or surpassed the strength of Egyptian cottons; Amsak (American-Sakellaridis) compared with Karnak-Egyptian cotton.

Davison Chemical Corp. announced its new product, Dapex, a mothproofing compound.

Toyo Rayon Co. of Japan entered into an agreement with Du Pont to produce nylon for payment of 3 million dollars in advance and to pay 3% profit for 15 years. The current output of 5 tons daily will be doubled.

The export company for the German synthetic fiber *Perlon* exhibited another new fiber known as *Mirlon* which is classed as a caprilactam and can be dyed in the same way as a natural fiber.

In May, the Du Pont Company announced that it would build a plant in Kinston, N. C., for the manufacture of Dacron. Present staple is priced at $1.80 per pound for 3 to 6 denier and continuous filament yarns range from $2.15 to $3.00 per pound.

The United States Rubber Company developed a new waterproof fabric made of nylon fiber and plastic with a weight of only 5 ounces per square yard. Tear strength ranges from 15 to 22 pounds; tensile strength is from 150 to 180 pounds. The base fabric used is coated on both sides, making this *Fiberthin* fabric alkali-, acid-, flame-, mildew- and oil-resistant. Present uses include airplane wing covers and rainwear.

Deering, Milliken presented *Viracle*, its 8-ounce men's suiting fabric made of 55% Dacron and 45% wool. Wrinkle-resistance, crease-retention, general appearance and stability superior to all-worsted are claimed for the fabric.

Dr. Tachikawa, Japan, announced a new textile fiber to be known as *Toramomen*, synthetic in nature.

The Federal Trade Commission held a two-day meeting in New York on the proposed rules pertinent to a definition of rayon and acetate rayon. Much time was also spent on future labeling procedures to be followed. These topics have been the center of interest for years and final decisions were awaited with eagerness.

The National Association of Wool Mfrs. registered its objection to the terms *preshrunk*, *washable* or *launderable* unless the goods were equally launderable with normal cotton materials. It endorsed the A.A.T.C.C. Test #41-39.

* * *

In June it was announced that SCAP would soon close its New York office, after 3½ years of operation as a central clearing house and selling office for products of Japan, chiefly silk.

The chairman of Courtaulds, Ltd. recently stated in London that the newer man-made fibers presented no serious thread to acetate and viscose rayon. Nylon is able to stand on its own feet while Orlon and other fibers in the group seem to be useful only for blending at present.

In July, the findings of a recent survey of the clothing used by women presented some interesting facts. There are 11% more women over the age of 15 than there were in 1941. About one-third of the women over 15 earn their own living, compared with 25% as recently as 1949. Ten years ago glamor in dress seemed paramount in the minds of women; the present trend is toward comfort and ease, result of more casual or informal style of living.

Harry J. Devereaux, president of the American Wool Council, called to task the Committee on New England Economy for a statement which appeared in its report to President Truman that the Wool Products Labeling Art is *deceptive and misleading*. Mr. Devereaux stressed that the Act was passed as a safeguard against legalized cheating by setting up standards of common honesty. He further stated that the Act does not attempt to curb the use of reworked wool, reused wool, remanufactured wool or any other textile fiber.

Apparel fabrics known as *Nite-Glo*, of cotton, nylon and rayon, were being developed by Shain & Co., Boston. These fabrics will appear normal in the daytime but will glow at night. The use of metallic sulphide in the colors used makes possible the brilliant color effect in the dark.

Arthur Kahn Co., New York City, filed suit against Switzer Bros. for unfair competition in alleged infringement of patents on the fluorescent fabrics which have attained nationwide popularity. The Kahn interests claim prior use of the fabrics.

The American Woolen Co. will erect a plant in Raleigh, N. C., for its production of blended fabrics and possibly for its all-man-made fiber fabrics.

Early in August, in the battle of man-made fibers versus wool, a lively topic, Economic Stabilization Chief Eric Johnston denied he had ever thought or stated that man-made fibers were better than wool or that they would "do to wool what nylon did to silk."

C. A. Setterstrom, textile fibers sales manager of Union Carbide and Carbon Chemicals Division, stated that chemical manufacturers plan to produce 100 million pounds of acrylic fiber a year by 1953. Lower material costs will gradually place the acrylics such as Dynel, Acrilan, Orlon and Saran in a position to compete with cotton and rayon. (Acrylics are a result of the development of by-products of coal and lime, natural gas and hydrocarbons, and oil refinery cracking gas.)

A report of the National Cotton Council stated that in the 11 years from 1939 to 1950, cotton consumption in 55 major uses increased 2,026,080 bales for a gain of 61.2% The greatest gains have been in drapery and upholstery fabrics, and in cotton rugs.

Mr. F. Eugene Ackerman, president of the Wool Bureau, Inc., stated that *synthetic wool* did not actually exist and that there was no Administration Plan to expend 400 million dollars to finance its production as a substitute for wool.

General Dyestuff Corporation in conjunction with General Aniline Film Corporation and the Owens-Corning-Fiberglas Corporation, have developed a process for dyeing fibrous glass without reducing flame resistance, and at the same time increasing wash-fastness, abrasion-resistance and the important draping qualities of the material.

Courtaulds, Ltd. will build a rayon plant in Huntsville, Ala., at a cost of close to 11 million dollars. Operations are presumably to begin in 1953. This move will mark the re-entry of Courtaulds into the field in this country after an absence of about ten years. Courtaulds, Ltd. severed its ownership of the American Viscose Corporation, which it founded and controlled, in 1941. Since the relinquishment of this ownership and until now, Courtaulds has been shipping its British-made products to this country.

The men's hosiery unit of Burlington Mills will make socks of Orlon filament as well as of Orlon staple fiber. These will be produced on 132-needle Komet machines, while spun Dacron socks will be made on 84-needle machines of the same make.

The Textile Economics Bureau, Inc. reported that world fiber production for 1950 totaled 18,227,000,000 pounds.

The New Zealand wool auctions, which had been suspended since February of this year, were resumed on August 15 when about 300,000 bales were offered.

A British Commonwealth plan to support wool prices and to discourage major rises and falls in the wool market made its appearance. The plan compares well with the farm parity price

plan followed in this country, but seems to be more flexible in execution. One of the highlights of the plan is that any nation greatly concerned with the wool trade can call for international group meetings if the price of wool seems to be too high. The plan was promulgated after a 10-months' study of the problem by the International Wool Study Group which met in London last October.

Wool prices in New Zealand have shown an average decline in price of 65% from the spring levels when many wool offerings were taken off the market. Wool futures dropped from 2.90 to 6.20 cents a pound, while wool tops futures dropped 2.40 to 4 cents a pound, in recent sales.

The principal characteristics of Acrilan, the new acrylic synthetic fiber of Chemstrand Corporation, include warmth-without-weight, crease-resistance, shrink-resistance, rapid drying, moth-resistance, crease-retention, soft, appealing hand or touch and resistance to deterioration out of doors. Chemstrand, incidentally, will build a new plant in Pensacola, Fla., where it will produce 50 million pounds of nylon annually.

Celanese Corporation announced that its wool-acetate suiting blends can now be dyed satisfactorily in the same shades as spun suiting, the questions of wool staining and absence of fastness to light having been overcome entirely.

Marine Corps Col. I. M. Bethel, replying to a request of F. Eugene Ackerman (Wool Bureau), that the Marine Corps cease its purchases of mohair, rayon and nylon blend for summer uniform fabric, stated that the Marine fabric choice is washable and that there is a saving of $10 on each uniform.

On Labor Day, September 3, The World Chemical Conclave convened in New York City, in one of the greatest gatherings in modern times. The two weeks' assembly attracted 18,000 chemists and chemical engineers from 42 countries. The keynote was textiles and textile chemistry.

The South African wool market opened in Capetown for the auction sales. The closing price last season was $1.87, while the price for these fine wools is now 91 cents per pound, a drop of more than 50 percent.

The International Cotton Advisory Committee announced that the cotton consumption for 1951-52 may be only moderately below the record of 33 million bales consumed in 1950-51. World production of cotton was estimated around 35 million bales.

On September 7 the Wool Associates of the New York Cotton Exchange reported that the use of virgin wool in the seven largest wool markets of the world had dropped 16% between the first half of 1950 and the first half of 1951. Consumption of man-made fibers, during the same period, had increased 13 percent.

U.S.D.A. estimated the cotton crop for this year at 17,291,000 bales, at a gross weight of 500 pounds to the bale.

The National Cotton Council, Memphis, Tennessee, announced that its new official reference book, *Cotton from Field to Fabric*, was ready for distribution.

In mid-September the International Silk Congress, at its meeting in London, decided to spend one-half million dollars to publicize silk. An intensive educational program will be inaugurated to educate the public on the qualities and advantages of silk.

Dr. K. E. Mees, Eastman Kodak Co., Inc., prophesied that by the year 2000 there would be a world shortage of fibers, which may be avoided by the rise of man-made fibers provided raw materials are available and a low price could be set on the basic items.

The Office of Defense Mobilization, in the plan of the government to enlarge the production of man-made fibers, has decided not to go ahead with its program for a year or more. The recent decline in wool prices was given as the reason for the decision.

The Federal Trade Commission in New York agreed on September 22 to the change in nomenclature for rayon and acetate rayon. The trade practice rules, first announced in 1937, will now be such that regenerated cellulose fibers — viscose and cuprammonium — will be known as rayon, while fibers made from cellulose acetate will be known as acetate.

The bill for informative labeling of cotton products was introduced in the Senate by Senator Lister Hill. Manufacturers, if the bill succeeds, will have to disclose fiber content in percentages; wool-cotton mixtures will have to show full fiber content; if a fiber is less than 5 percent of the total the percentage will not have to be noted on the labels.

The first dynel blankets made by the Pepperell Manufacturing Company were introduced at Stern Brothers store in New York City. Pepperell dynel crib blankets were marketed early this year.

American Viscose Corporation has stabilized viscose rayon by a new process which eliminates chlorine retention. The process, called *Aviscoset*, is to be used mainly on shirting fabric on a royalty-free basis.

Typewriter ribbon fabric was marketed by Burlington Mills Corporation. Three to four times longer life is claimed for the new product, as well as cleaner type and easier erasures.

Early in October it was announced that the rayon production of Japan would soon reach the peak output which it had prior to World War II. Japan is now shipping rayon to 90 countries.

Newnan Cotton Mills, Newnan, Georgia, announced that a 70% Dacron and 30% wool blend showed excellent results for simulating worsted type fabrics.

At the third Congress of the International Silk Association meeting in London, a base price on raw silk was established at $3.80 per pound with allowable fluctuations of 10 percent. Buying of silk in the United States has been low for quite some time; one of the reasons, very likely, why the price of silk has been lowered so as to stimulate buying by silk manufacturers in this country. The present Yokohama market is around one dollar higher in price.

At the annual meetings of the AATCC, J. Spencer Love, chairman of the board of Burlington Mills, Inc., urged the formation of an industry-wide promotional body or council to include all members of the man-made textile groups — weavers, converters, dyers and finishers — to represent the industry and act as spokesman whenever necessary. Mr. Love suggested that this body coordinate its efforts in promotion of the products with consumer groups, fashion magazines, manufacturers, newspapers, and retailers.—END OF 1951.

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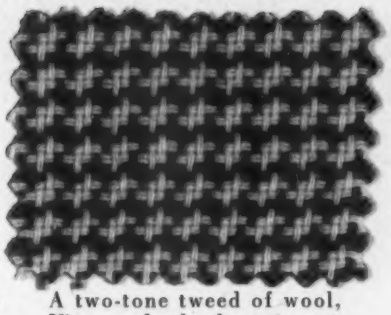

A two-tone tweed of wool,
Vicara and nylon by MILLIKEN.

NEW TRENDS IN BLENDED FABRICS

Ever since Mendel worked and wrote, the word hybrid has implied the pooling of best characteristics of parentage to produce superior offspring.

THE MATING OF natural with man-made fibers has resulted in a series of new fabrics that are perfectly attuned to our era. These hybrid fabrics have provided creative possibilities and new ideas for fashions which had been hitherto undreamed of. They have permitted mills to operate and cutters to make end-products when a rising population plus attritive wartime over-consumption brought about a demand for fabrics of all types far greater than natural-fiber production could handle. They have created textiles of essentially new character which not only fulfill the woolen needs of the ultimate consumer but which in almost every instance prove themselves to be superior in some respect to the fabrics which they replaced.

The result is a series of textiles which offer new creative and sales possibilities for both maker and retailer. Through exhaustive experiments, new combinations of colors and new dyeing processes were invented. New attributes of warmth without additional weight, of waterproofing, laundering and strength were added to blends through scientific investigation of fiber properties and constant testing of finished fabrics. The consumers took to these products eagerly and a possible industry depression was changed into a sales boom. Milliken's successful experimentation is one example of the mills' creativeness in stimulating and filling market demands.

' ' '

Wool in itself is a wonderful cloth-making fiber; one of its disadvantages, however, is the tendency to react antipathetically to the most common method of cleaning . . . soap and water. Orlon, on the other hand, is characterized by easy washing-fast drying qualities. In addition, this acrylic fiber requires little or no ironing; it is crease-resistant; moth-, mildew- and perspiration-resistant. and has considerable bulk without too much weight. By blending wool and Orlon in a 45-55% basis, Milliken has been able to produce a superior washable wool-blend fabric in a variety of weights that makes it acceptable and fashionable for women's sportswear, dresses, coats, skirts, separates, suits, children's wear and negligees.

By combining nylon and wool, Milliken has produced a series of fabrics from a 7-ounce dress weight to a 15-ounce coating. These answer the dress, sportswear, skirt and coat industries' demand for wool textured fabrics that have greater strength, more durability and lower cost.

In order to overcome the problems of shrinkage and to maintain a constant soft, fleecy hand similar to that of cashmere, Milliken took the new protein fiber, Vicara, and blended it with a wool base into a 12-ounce cloth that has the warm, elastic characteristics of wool with the luxury feel of a fine cashmere.

To set and maintain the advantages of this combination, Milliken added 12½% of nylon (32½% Vicara, 55% wool, 12½% nylon) to increase the wearing quality of this textile beyond normal expectancy.

Combining Dacron with wool, Milliken has turned out a blended worsted fabric. Composed of 55% Dacron and 45% wool-worsted, this material results in an 8½-ounce, hard-finished fabric which possesses a marked degree of wrinkle-resistance and shape-retention even while wet! Its weight and hand make it desirable for both men's and women's apparel.

Important too—many of these textiles are amenable to special finishes such as Duramil for water repellency; Milliset for crease resistance, and others such as mothproofing, shrinkage-retardance and spot-resistance.

' ' '

Today most people want to buy blends of wool with man-made fibers. The reason is simple enough. The scarcity of fine wools has caused a rise in price that puts many 100 percent wool fabrics out of the mass consumer range. Despite the high income level of the average consumer, taxes, rising prices and a fear of inflations has brought about a renaissance of shrewd shopping habits. Today's consumer inspects fashion fabrics with a keen eye to warmth and handling characteristics; she also insists upon qualities of extra wear, beauty, special finishes, cleanability and other characteristics that will give her greater fabric value than her antecedents ever expected or received.

And she has a right to expect this, for progressive mills have spent millions of dollars telling her this dream story of the modern blended fabric. Magazines, newspapers, mail by the ton, hangtags, posters, radio, television and movies all have contributed to her education about fabrics constructed with two, three, or more basic fiber-types.

Such propaganda stimulates the ready-to-wear industry since it arouses a desire-to-buy that earmarks a greater percentage of the consumer dollar for fashions.

Add to this the fact that the making of such fabrics requires no special re-tooling, nor does it operate against the continued fashioning of all-wool fabrics into desirable end products, and the stability of the new trend is easily understood.

letters to the editor

ENJOYS SPECIAL FIBER ARTICLES

To the Editors:

I have just finished reading your comprehensive *Story of Celanese* in the Autumn 1951 issue. I recall, too, my satisfaction in going over the similarly treated *Story of Lastex* in the preceding issue, as well as certain others you have presented on the new fibers and fabrics. I have found these among the most worthwhile of your many featured presentations.

I trust that you will continue to publish such selected articles on the various yarns and fibers with illustrations and swatches. They are informative for everyone — analytical and technical enough for reference use by those *in the know* in the textile field, and readily understandable by the lay person or consumer who wishes to be better informed in purchasing and using textile products.

One can envisage such a series as an excellent collection to be reprinted in a handy single volume. If this suggestion has practical possibilities, I feel sure many of your readers would welcome such a compilation of articles on recent and current textile developments, some of which are nothing short of fabulous, even in this 20th Century.

D J. Tanner
Chicago, Illinois

COMPLAINT BY A CONSUMER

To the Editors:

I happened to pick up a copy of American Fabrics and am writing to you in the vain hope that my cry may be heard. I say *vain* because I know that the textile business is one of the greatest in America and yet it fails to fulfill my needs. I want to know specifically how to care for a fabric, and the tags that are attached to the garments and other items that I buy are not exact enough for me. I am not exactly dull, and I can read; and I assume that when a garment reads *washable*, it means that with ordinary care (and by ordinary care I mean avoiding the use of harsh soaps or boiling or rubbing excessively) a fabric should retain its color, its shape and its durability. Can you really believe that I have bought corduroy jumpers for my child and later found the colors not to be fast? How dare a manufacturer make a fabric for such an end use and not insure against this? I paid six dollars for a pair of pajamas and found after several washings that the fabric of the underarms began to shred. You can bet your bottom dollar that the store from which I purchased this credited me with this.

You may well ask why I am seemingly wasting both your time and mine. Who will listen to me or even to the thousands of my sisters who suffer from this short-sightedness on the part of fabric people? Perhaps if you took up the cudgels for us, perhaps if you crusaded for us, something could be done to eradicate these well-known abuses.

Mrs. Ethel Straub
Chester, N. J.

IN TEACHING WEAVING CLASSES

To the Editors:

I would like to take this opportunity to tell you how much I appreciate your wonderful magazine. I am using it continuously in teaching my weaving classes and recommend it with enthusiasm to every person interested in textiles.

Every year with a new class of students we wonder whether we can still get copies of the District Checks and the Clan Tartans reprints. We would like copies for each student if they are still available.

More and more I find these features, as well as American Fabrics, indispensable in teaching handloom weaving.

Else Regensteiner
Head of Weaving Dept.
Art Institute of Chicago

DESIGN INSPIRATION

To the Editors:

Recently I visited the Jewish Museum in New York City which contains thousands of Jewish art creations — vessels, cloths, manuscripts that are illuminated, vases, ceremonials, objects in copper, silver, bronze and gold — in which there is a veritable treasure-trove of original designs, patterns and devices which may prove suggestive for fabric designs.

Since Jewish artists of the past were compelled to devise designs, patterns, and illustrations without the human form, they created in glowing and beautiful combinations of colors all kinds of geometrical shapes and forms in artistic and inspiring devices to express their feelings and ideas. Some of them, I am sure, would compare favorably with the Chinese and African Negro tribal creations. Moreover, since their roots are Oriental, they loved rich and warm colors and combinations of colors, some of them most exotic and alluring.

Maybe you might come upon some design or pattern . . . not necessarily Jewish but universal and, because it is rooted in Jewish art, quite different from the usual run of designs . . . at the Jewish Museum which is on Fifth Avenue near 90th Street. Dr. Stefen Keiser is the Curator. . . .

Rabbi Mortimer J. Cohen
Philadelphia, Pa.

GENTRY SUBSCRIBER WISHES A. F.

To the Editors:

Have received the first copy of Gentry due on my subscription. The magazine is indeed beautiful, the photos sharp and clear, the color work and type distinctive and the entire format new and very attractive. I understand that you publish also American Fabrics and would like to order a single copy to examine with a view to subscribing.

Charles F. Seitter
Philadelphia, Pa.

MORE ON STANDARD FABRICS

To the Editors:

Congratulations on your Fall 1951 issue of American Fabrics. It's a book on fabrics that is educational and informative.

In looking at page 53, we note in your 80 standard fabrics, an omission of silk pongee and silk habutae. We think that any list containing standard fabrics should also include silk pongee and silk habutae.

Hoping you accept our suggestion that any future mention of a list of standard fabrics will also include these materials . . .

Ira E. Gordon
450 Seventh Avenue

The abovementioned fabrics, though specific in type, were not considered as actual standard fabrics to be included in the selected group presented in the preceding issue. These two fabrics, however, were included by American Fabrics *in a dictionary of silk terms published earlier.*

A. F. FOR TEXTILE CLASS USE

To the Editors:

Your contribution to our Textile Exhibition in May added greatly to its value. And your generosity in providing samples of your wonderful magazine and subscriptions to prize winners was much appreciated by our many friends.

We make a great deal of use of American Fabrics in our Textile and Fashion classes and are looking forward to continued cooperation with your publication.

John W. Wingate, Professor
Bus. Administration
The City College, New York

MODERN VS. CLASSIC

To the Editors:

I have just finished reading the Paisley Issue of Fabrics and as usual find it stimulating and interesting, but there is one question that I would like to pose. Has there been nothing vital created since the 17th century? If one judged solely by what is selected by the editors of American Fabrics in the art or literature field, the answer would seem no . . . but is there not evidence to the contrary? I dare you to give this question the thought of which you seem capable.

Carlotta Friede
Andover, Mass.

CREATIVE INSPIRATION

To the Editors:

There must be many people in the textile field who appreciate and are grateful for the wonderful collections of beautiful designs from former times you publish such as the Paisley designs in your Number 17 issue.

It is a modern myth that art is produced solely from the creative urge of the artist; he must have material to work with. Renoir, when asked where art may be learned, is said to have replied: "in the museums."

The present day constitutes an analytical period in art and as such has great value. When it has passed we may yet turn to nature and to the ancient arts and enjoy once more decoration such as the frieze of the Parthenon or the capitals of the Gothic columns or the Chinese T'ang and Sung dynasty sculptures.

Arthur H. James
London, S.W. 10

SPECIALIZED TEXTILE INFORMATION

To the Editors:

I am looking for a copy of a book by Parker and Midgeley called *Analysis of Woven Fabrics*. I have tried bookstores here and in England without any success. The reason I am so anxious to have a copy is that it explains the different shrinkages in weaving cloth, and it shows the theory of cloth structure, diameters of yarns, etc.

Would you know perhaps of another book which has the same contents and is available? I might add that I am experienced in the worsted weaving line.

Alfred Arditti
Toronto, Canada

The Parker and Midgeley book is, as far as we know, out of print at this time. There is a book now in preparation by Joseph J. Pizzuto along the line of what you seek.

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The difference: they never stretch, never sit out, never sag. You pack them, wear them, wash them . . . and just hang them up, with no expensive attentions. The reason: they are made in Bates Rippelastic, a momentous new cotton permanently woven and textured with Lastex. Yellow, shrimp, aqua, lilac, navy. Sizes 10 to 18. $22.95 at good stores

Bates **RIPPELASTIC**

Developed by Bates, made only by Bates,
the fine all-combed cotton woven with locked-in Lastex.
Bates Fabrics, Inc., 80 Worth Street, New York 13

Philip Hulitar's very beautiful dress for a very important party...tiny waist—bouffant skirt—in Burlington's rayon organza, woven with Enka Rayon, the yarn of fashion's fine fabrics.

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ENKA RAYON

American Enka Corporation, 206 Madison Avenue, New York 16, N.Y.